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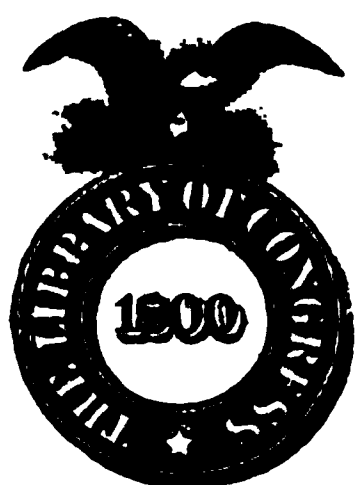
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AGRICULTURAL APPROPRIATION BILL, 1922

HEARING

BEFORE

SUBCOMMITTEE OF HOUSE COMMITTEE ON APPROPRIATIONS

CONSISTING OF

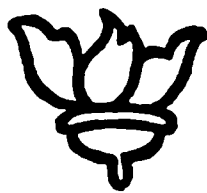
**Messrs. SYDNEY ANDERSON (CHAIRMAN), WALTER W. MAGEE,
EDWARD H. WASON, THOMAS L. RUBEY,
AND JAMES F. BYRNES**

IN CHARGE OF THE

AGRICULTURAL APPROPRIATION BILL FOR 1922

SIXTY-SIXTH CONGRESS

THIRD SESSION



**WASHINGTON
GOVERNMENT PRINTING OFFICE**

1921

AGRICULTURAL APPROPRIATION BILL, 1922

HEARING

BEFORE

U. S. Congress

SUBCOMMITTEE OF HOUSE COMMITTEE ON APPROPRIATIONS

CONSISTING OF

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COMMITTEE ON APPROPRIATIONS.

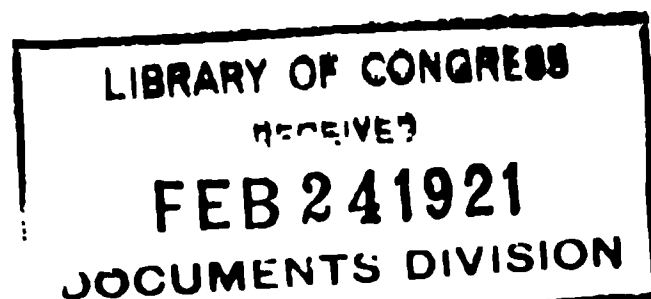
HOUSE OF REPRESENTATIVES.

SIXTY-SIXTH CONGRESS, THIRD SESSION.

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MARCELLUS C. SHEILD, *Clerk.*



March 11, 1922

AGRICULTURAL APPROPRIATION BILL, 1922.

HEARINGS CONDUCTED BY THE SUBCOMMITTEE, MESSRS. SYDNEY ANDERSON (CHAIRMAN), WALTER W. MAGEE, EDWARD H. WASON, THOMAS L. RUBEY, AND JAMES F. BYRNES, OF THE COMMITTEE ON APPROPRIATIONS, HOUSE OF REPRESENTATIVES, IN CHARGE OF THE AGRICULTURAL APPROPRIATION BILL FOR 1922, ON THE DAYS FOLLOWING, NAMELY:

MONDAY, DECEMBER 20, 1920.

OFFICE OF THE SECRETARY.

STATEMENTS OF MR. R. M. REESE, CHIEF CLERK; MR. FLOYD R. HARRISON, ASSISTANT TO THE SECRETARY; AND MR. ROY L. SWENSON, MECHANICAL SUPERINTENDENT, DEPARTMENT OF AGRICULTURE.

ADDITIONAL EMPLOYEES—INCREASES IN SALARIES.

Mr. ANDERSON. If you will give the number of the items, Mr. Reese, we are to discuss, we can keep the record straight.

Mr. REESE. An increase of \$500 is estimated for in the salary of the chief clerk. The salaries of the chief clerks of five of the other departments have been \$4,000 for some time back, and the salary of the chief clerk of the Department of Agriculture has remained at \$3,500 since 1913, with a considerable increase in the work and duties. The chief clerk gives general supervision to the clerks and employees of the department and the correspondence, files, and records of the Secretary's office; supervises expenditures from certain appropriations and enforces the general regulations of the department; is chairman of the board of awards, which has passed during the last fiscal year on 1,318 awards, involving expenditures of about \$2,000,000; is a member of the departmental committee on finance and business methods, which spends a great deal of time in preparing drafts of regulations and decisions on departmental questions for the consideration and action of the Secretary, and is in general charge of the administration of the retirement law of May 22, 1920. He is also by law custodian of buildings, which is a line of work involving a great deal of labor, since the department occupies so many buildings—about 42 in all; has general supervision of the watch force and acts in effect as chief clerk of the Secretary's branch with some 435 employees.

As you will see from the Book of Estimates the salaries of the chief clerks in other departments have been estimated for on an increased basis, some of them for a much larger increase than \$500.

it is believed that the position of Chief Clerk of the Department of Agriculture is comparable in labor and responsibility with that of chief clerks of other departments where the salary is \$4,000.

Mr. ANDERSON. Have you any compilation or list of the salaries paid to chief clerks in the other departments?

Mr. REESE. I can tell you all of them.

Mr. ANDERSON. Just put them in the record.

(The list is as follows:)

Salaries paid the chief clerks of the 10 executive departments.

[Legislative, executive, and judicial act for the fiscal year ending June 30, 1921.]

	Salary.
Treasury-----	\$4,000
War-----	4,000
Interior-----	4,000
Post Office-----	4,000
Justice-----	4,000
State-----	3,000
Navy-----	3,000
Commerce-----	3,000
Labor-----	3,000
Agriculture-----	3,500

Mr. REESE. You wish to deal, I suppose, Mr. Chairman, solely with the items where there are changes?

Mr. ANDERSON. I would like to ask you a question on items 8 and 9, two executive clerks. My recollection is that these two places have been created in the last few years.

Mr. REESE. In the 1917 appropriation act.

Mr. ANDERSON. What is the character of the work done by those two men?

Mr. REESE. The executive clerk at \$2,250 now is detailed to the Bureau of Chemistry. The \$2,100 man is in charge of the Secretary's file room, with a force of 10 or 11 clerks under him.

The next item in which a change is involved is No. 14, one inspector. An increase of \$600 is estimated. This is the officer who conducts investigations in personal cases for the Secretary. During the past calendar year 223 bureau investigations, resulting in recommendations for disciplinary action by the Secretary, were carefully reviewed and forwarded to the Secretary with appropriate recommendations, in addition to which original investigations were conducted in 99 cases. A number of these cases involved the drafting of formal charges and the consideration of the answers thereto. Seventy special investigations were also made of the fitness of prospective employees for appointment. Requests for approximately 150 authorizations for permission to do outside work were given appropriate consideration.

Mr. ANDERSON. These are cases that involve charges against employees?

Mr. REESE. Charges of one kind or another; yes.

Mr. ANDERSON. They are not questions of promotion?

Mr. REESE. No. This officer is also a member of the departmental committee on finance and business methods.

Mr. ANDERSON. Proceed.

Mr. REESE. The same officer reviews the fiscal papers of the Secretary's office and has one section under him, known as the transporta-

tion section, which deals with the transportation requests of the department and the transportation accounts—passenger, freight, and express. That has been a large amount of work.

Item 16 is explained by the note.

METHOD OF HANDLING TRANSPORTATION REQUESTS.

Mr. BYRNES. Will you tell me what procedure you have to govern the transportation requests?

Mr. REESE. An employee of the department ordered to travel on official business is given an authorization. He has to have that before he starts, except in cases of emergency. He then applies for a book of Government transportation requests, which are prepared for him in advance and signed by the proper officer of the bureau. He takes those with him and purchases his transportation and Pullman accommodations with these requests, which saves him putting up his cash.

Mr. BYRNES. I know all that, but does this officer inspect those requests?

Mr. REESE. He audits those which pertain to travel by officials attached to the office of the Secretary and sees that the others reach the proper bureau officer for audit. He also answers inquiries from the railroads regarding the status of their accounts against the department.

Mr. BYRNES. He does not pass upon them before they are granted; they are granted by an official of the bureau?

Mr. REESE. Yes; under a general authorization issued to the bureau by the Secretary at the beginning of the fiscal year.

Mr. ANDERSON. As a matter of fact this transportation request in the preliminary stages is made by the bureau which authorizes the travel.

Mr. REESE. Yes, sir.

Mr. ANDERSON. Each bureau has a separate office of some kind for the issuance of these authorizations and to audit the request before it is granted?

Mr. REESE. Yes, sir. The administrative officers in the bureau decide in advance as to the necessity for travel of a routine character.

Mr. ANDERSON. And that does not come up to the Secretary's office at all except in the case of employees in the Secretary's office?

Mr. REESE. Routine travel is ordered by the bureaus without specific reference to the Secretary, but general letters of authorization or those involving special features, such as travel into foreign countries and the like, must always be submitted to the Secretary for approval in advance of the travel.

Mr. BYRNES. There is no check on that other than that of the inspectors of the various bureaus.

Mr. REESE. No audit you mean.

Mr. BYRNES. No audit.

Mr. REESE. They get the administrative examination in the bureau, as required by law, are paid in the usual way, and are then sent to the Treasury Department, where, as in the case of all other accounts, they are subject to the scrutiny of the auditor and comptroller.

Mr. ANDERSON. You are referring now to the audit before payment, not after payment, that is done in the department?

Mr. BYRNES. Mr. Reese, is there a provision anywhere in the department for any official authorizing travel or transportation other than the officials of the various bureaus?

Mr. REESE. No.

Mr. HARRISON. You misunderstand the question, Mr. Reese. Under certain conditions travel has to be approved by the Secretary's office before it can be performed. That is true of attendance at meetings and recommendations with respect to certain other species of travel which are enumerated in the regulations and required by them to be presented to the Secretary's office for consideration and approval before the travel is performed.

Mr. ANDERSON. In respect to travel which is performed with reference to projects under each of the bureaus, the preliminary audit is made in the bureau itself?

Mr. HARRISON. The audit; yes. The transportation requests are issued to the individual who performs the travel. He presents the transportation request to the railroad company. When he submits his reimbursement account he states on the back of it what transportation requests he has used, and then the railroad company, at the end of the month, submits its bill to the department. It comes to the office of inspection in the Secretary's office and it is there segregated according to the appropriations involved and sent to the bureaus for audit, and later goes to the Division of Accounts, where it is paid. In the case of freight accounts, the disbursing officer of the department, after completing his record, forwards them to the Auditor for the State and Other Departments for settlement.

Mr. ANDERSON. Proceed, Mr. Reese.

Mr. REESE. Item 16: The position of one attorney, at \$3,000, is submitted in lieu of two law clerks, at \$1,800 each, and two law clerks, at \$1,600 each; that is to say, the number of statutory positions in the office of solicitor is reduced by two and in lieu thereof there are submitted two places—one at \$4,000 and one at \$3,000. That involves a net increase of \$200 only.

Mr. HARRISON. Perhaps you ought to indicate the items, Mr. Reese, that should be considered together. Nos. 16, 19, 26, and 27 are to be considered together. In other words, there is a substitution of one new place at \$4,000 and one at \$3,000 for two at \$1,800 and two at \$1,600, making a net decrease of two in the number of places and a net increase of \$200 in the total amount.

Mr. ANDERSON. That is to say, you drop four places and add two new places, with a net increase of \$200?

Mr. HARRISON. Yes.

Mr. BYRNES. The department would rather have those two men, one at \$4,000 and one at \$3,000, than to have four?

Mr. HARRISON. Yes; we would rather have a smaller number of higher-grade places in order to check the turnover. In the last two years 14 law clerks have left the department for higher pay elsewhere, and we are having increasing difficulty in keeping the men.

Mr. BYRNES. If the committee should grant a change of that character, would you be coming back here at the next session and asking for two more attorneys to take the place of these two which are dropped?

Mr. HARRISON. No, Mr. Byrnes; we do not expect to.

The next item in which there is a change is No. 28, on page 11.

Mr. REESE. One superintendent of telegraph and telephone, an increase of \$500. That man acts in a triple capacity. He directs the telegraph and telephone work of the department and, in addition to that, he is now conducting an audit of the accounts for telegraph and telephone service. His position is not exactly comparable to any other that I know of in the Government service, but in the Government service there are telegraphers alone who are paid salaries as high as \$1,800, and in the Western Union Telegraph Co. men holding comparable positions—say, for example, supervisors of telegraphers—are paid an average salary of \$195 a month. This man's salary for all three functions is \$166 a month. The Civil Service Commission has recently held an examination for telephone auditor at a salary of from \$2,000 to \$2,400 a year. In telephoning alone the Chesapeake & Potomac Telephone Co. pays its traffic chiefs from \$200 to \$300 per month. I wish to make it clear that this man is now discharging the triple function of telegraph and telephone supervisor and auditor, and doing it very well, at a salary of \$2,000 per annum.

Mr. ANDERSON. What does he do with reference to the telephone and telegraph?

Mr. REESE. In telegraphing he directs the operations of the two telegraphers under him and himself sends telegrams when the rush is on. On the telephone end he directs the operations of six telephone operators and is himself a pretty competent wire chief, and when trouble develops is able to tell where the trouble lies.

Mr. ANDERSON. You have a mechanic to look after that, I suppose?

Mr. REESE. Yes; but mechanics are only called to do the work when told.

Mr. BYRNES. You only have two telegraph operators?

Mr. REESE. He has two telegraph operators under him and he himself is a telegraph operator.

Mr. BYRNES. What necessity is there for a director of two operators?

Mr. REESE. He directs the operations of the whole office, which combines telegraph, telephone, and audit of both classes of accounts.

Mr. BYRNES. But if the whole office only consists of two men——

Mr. REESE. Only two telegraphers. There is a force of telephone operators under him at the same time.

Mr. BYRNES. The telephone operators are also under his supervision?

Mr. REESE. Yes; as I have stated, he discharges three functions.

Mr. BYRNES. I do not think there is any need to have a director for the operations of two men.

Mr. REESE. That is just part of his duties.

Mr. BYRNES. A small part of it. What else does he do? He supervises the telephone operators, you say. How many telephone operators have you?

Mr. REESE. Six.

Mr. BYRNES. He is the only supervisor of those six operators, then? You have not got some other official there as supervisor of the telephone operators?

Mr. REESE. No. It is a combined office with us. The telegraphs and telephones are all in the same room, and this man is in charge of both kinds of work; and when it is necessary he sends telegrams. He also audits the accounts as submitted by the telegraph and telephone companies.

Mr. HARRISON. He has a great many more duties than the mere supervision of those employees. The department has a large number of phones throughout the department, and he is responsible for seeing that those phones are in working order. He does not repair them himself, but there has to be somebody in charge of the work, and charged with the maintenance and upkeep of the telephone and telegraph equipment. And, not only that, he handles the telegraph accounts—that is, he makes a preliminary enumeration of them before they go to the bureaus. The telegraph companies do not submit their accounts for each individual bureau, but their bills are rendered to the department. They are then checked against the records of the telegraph office, properly segregated, and sent to the respective bureaus for checking. We can not expect the telegraph companies to send bills for all the telegrams which go over their wires to the particular bureau or bureaus involved. The principal function of the superintendent of telephones and telegraph is to see that the equipment is kept in good operating condition at all times.

Mr. REESE. The telephone business in the fiscal year 1920 amounted to 163,000 calls and the telegrams to 53,404.

Mr. ANDERSON. That includes local calls, long-distance calls, and everything?

Mr. REESE. It does not include intradepartmental calls.

Mr. HARRISON. You see, we have had a double system in the department; that is, we have had an inside telephone system connecting the various bureaus, and also what we call an outside system—that is, phones belonging to the Chesapeake & Potomac Telephone Co.

Mr. ANDERSON. Does this statement of the number of calls include the number of inside calls?

Mr. REESE. No; it does not include the number of intradepartmental calls. These are calls made through the Government exchange and the Chesapeake & Potomac.

Item 30 is a recommendation for increasing the salary of the assistant chief clerk and captain of the watch, a dual capacity man who heretofore has been receiving \$1,800. His duties as captain of the watch are particularly responsible and involve the directing of a force of some 80 watchmen—a shifting force of about 80 or 85. In other departments I find the two functions are usually separated. In the Treasury Department, for example, there is an assistant chief clerk at \$3,000, and in the War Department an assistant chief clerk at \$2,400. In the Treasury Department they have three captains of the watch at \$1,400 each.

Mr. ANDERSON. Do you know how many watchmen they have over there?

Mr. REESE. No; I do not know, sir.

Mr. ANDERSON. They have several times your force, do they not?

Mr. REESE. It is larger than our force, I believe.

Mr. HARRISON. You might explain we have a centralized watch force in the department. Heretofore two of the bureaus, the

Weather Bureau and the Forest Service, have had watchmen under their own direction. Now, we are proposing to transfer them to the Secretary's office, so that the entire watch force will be under one head. We have around 80 watchmen in the department, and they have 42 buildings to take care of. This means that the captain of the watch must see that these watchmen are on the job when their shifts come around, and he must also locate and secure temporary men when any of them are sick or on leave. In addition to that, he performs the duties of assistant chief clerk and acts as chief clerk in the absence of the chief clerk.

Mr. ANDERSON. He does not have anything to do with the watch force except what might be the clerical end of it?

Mr. REESE. Oh, yes; he has active charge of it and, among his duties, he comes to the department at night and frequently spends the whole night there himself, going around to the different buildings to see with his own eyes whether the watchmen are on the job. That has been done many times to my knowledge. He is actively in charge of the watch force, supervises and selects the men, and maintains discipline under my immediate direction.

Item. 33. The only change is a decrease of one clerk of class 3, by transfer to the statutory roll, Division of Publications. This clerk is an accountant who has been handling the work of the office of exhibits, which is now under the Division of Publications and where her services are needed, and it is merely necessary to arrange for her transfer to that roll.

Mr. ANDERSON. Does this mean a change of work?

Mr. REESE. The same work and the same salary. She was examining accounts in the office of exhibits when that office was in the Secretary's branch. She has now been transferred to the Division of Publications and is doing the same work there.

Mr. BYRNES. That does not involve any additional clerks?

Mr. HARRISON. That does not involve any additional clerks or any additional money.

Mr. REESE. Item 40, four clerks at \$1,000 each—decrease of one. That is explained by reference to item 57, on page 14. One of those clerks is dropped as a clerk and in item 57 the designation is changed to skilled laborer. The present incumbent is now acting as a skilled laborer and this is to properly adjust his title.

Mr. HARRISON. In other words, it is merely a change in title and does not involve any additional compensation.

Mr. BYRNES. Why do you want to change his title?

Mr. REESE. The man is doing skilled labor work and ought not to be carried as a clerk.

Item 41, six clerks at \$900 each; decrease of one. See note under item 47. The clerk dropped is acting in connection with the watch force and when we reach item 47 the note will fully explain why he is dropped as a clerk. The other five remain.

Item 42, five messengers or laborers, at \$960 each. There are submitted in lieu of 10 places as messenger boys at \$480. It is for the same amount precisely; but, not being able to keep these messenger-boy places filled, we are willing to let them go; we believe we can get along without them. And with the \$4,800 we will provide for five messengers or laborers at \$960, with the hope of getting better and more satisfactory messengers or laborers.

Mr. BYRNES. How many do you have now?

Mr. REESE. Twenty-three.

Mr. BYRNES. You mean authorized; but how many have you actually?

Mr. REESE. That is the number.

Mr. HARRISON. Mr. Byrnes means how many of those places are actually filled now.

Mr. REESE. I can not tell you offhand, Mr. Byrnes. The changes occur so frequently in these messenger-boy places I can not keep track of it. I can get it for you, of course.

Mr. BYRNES. Can you approximate it?

Mr. REESE. I think there are 10 vacancies; perhaps more.

Mr. BYRNES. You are getting along without those 10 now?

Mr. REESE. After a fashion; yes. The messenger-boy proposition is pretty difficult. They are constantly leaving, and you have to pick them up wherever you can. We are going to try to get along without those 10 and use the money for these higher-grade laborers.

Mr. ANDERSON. What need have you for additional laborers?

Mr. REESE. Frankly, we would like to promote some of the old men, too, if we can.

Mr. ANDERSON. How many promotions are contemplated if this change is made?

Mr. REESE. There could be made promotions of five men in this force.

Mr. BYRNES. To what could you promote them?

Mr. REESE. To \$960—a small promotion.

Mr. ANDERSON. From what?

Mr. REESE. From \$840.

Mr. HARRISON. You mean that five \$840 men would go into the five \$960 places and then you would fill the five vacancies thus created?

Mr. REESE. And the \$720 men would go into the \$840 places to give us a chance to promote these employees who are now trying to get along on a salary of \$60 or \$70 a month.

Mr. BYRNES. But you do not propose to drop anybody anywhere?

Mr. REESE. We are intending to drop 10 messenger boys.

Mr. BYRNES. But you have not got them, and if you can now get along without those 10 messenger boys what is the use of holding these places?

Mr. REESE. That is for the committee to decide.

Mr. BYRNES. But in deciding it, I want to get what argument you have in behalf of it, if there is one.

Mr. REESE. The argument is, plainly, we have more places for messenger boys at \$480 than we can fill and can get along without 10 of them.

Mr. BYRNES. But I understand you propose to use that money to promote men from \$840 to \$960?

Mr. REESE. Yes.

Mr. BYRNES. And you do not propose to drop any men at \$840?

Mr. REESE. No, sir. We want to use that same \$4,800 that is now going back into the Treasury for the promotion of some men to \$960.

Mr. HARRISON. Mr. Byrnes's point is you are apparently trying to hold those 10 messenger boys now, although you have indicated that

you can get along without them, or at least five of them. As I understand it, the 10 messenger boy places are vacant not because you do not need the services of all of them, but because you can not fill the places at the salary available and you feel you can do without five of them and ask the committee to give you five places at higher salaries, so that they can be filled. In other words, we are asking for five places at \$960, so that five can be promoted to those places from \$840, five from \$720 to \$840, and five new employees can be secured at \$720.

Mr. BYRNES. Ten places are now authorized; 10 messenger boys at \$480, which amounts to \$4,800?

Mr. HARRISON. Yes.

Mr. BYRNES. Do you propose to divide that \$4,800 among these five boys at \$960?

Mr. HARRISON. Yes; and then to drop five places which can not be filled at the lower salary.

Mr. BYRNES. That is what I am driving at.

Mr. HARRISON. Ten places are not filled now, not because we do not need the services of all those boys, but because of an inability to fill them at the salary available; so we are proposing to drop 5 places, not 10.

Mr. BYRNES. You are going to have five left of the \$720 places?

Mr. HARRISON. We are going to have five \$720 places left.

Mr. BYRNES. Will there be any necessity to fill those five places?

Mr. HARRISON. That is my understanding of the matter. Mr. Reese has canvassed it and that is what has been determined upon, and the estimates were made up in that way. Is not that so?

Mr. REESE. Yes.

Mr. HARRISON. Can you indicate to the committee the necessity for these five places?

Mr. REESE. The necessity is to promote some of the underpaid laborers now getting only \$840.

Mr. BYRNES. If we give you what you want and let you carry out your promotions, so that you have better men who are being paid higher salaries, can you then do away with the five places that will be made vacant in the \$720 class?

Mr. REESE. I think so.

Mr. BYRNES. Or will you fill those, too?

Mr. REESE. I think we can get along without them.

Mr. BYRNES. That is what I asked. If you would drop five men at \$720 and proposed only to employ better men at the higher salaries, that is a different proposition.

Mr. REESE. Item 43, 11 messengers or laborers at \$840 each. There is a decrease of three there, with a note to see item 47. We will also come to that when we reach the item for the watch force, and I would like to pass it over now.

Item 44, seven messengers or laborers at \$720 each, decrease of five by transfer to lump fund.

Mr. BYRNES. What do you mean by that—that you have transferred those men under the lump-fund roll or you will simply put those men over there for some other purpose?

Mr. HARRISON. Those men are part of the shop force, and we are proposing to create a lump fund for handling the mechanical work.

Mr. REESE. I will pass over item 46 also until we reach the general item of the lump fund for the shops, because this is merely listing the places to be dropped.

Item 47 is intended to provide for a change in the condition of the watch force of the department. I estimate for 2 lieutenants of the guard at \$1,440 each, 6 sergeants of the guard at \$1,320 each, and 81 guards at \$1,080 each. That would be the force then in lieu of the present force. The salaries I select there are based on the minimum rates in the Reclassification Commission's report. The salaries of the watch force are too low, \$720 per annum. The men on the night watch force, particularly, have really a heavy responsibility, being in full charge of the buildings during the whole night, safeguarding the property, watching for fires and patrolling the buildings once every hour. They have an awfully hard time to get along on \$720 per annum, even with the bonus, and it is only fair to try to get them an increase of salary, and \$1,080 is only \$90 per month.

Mr. ANDERSON. Plus the bonus.

Mr. REESE. Plus the bonus. These salaries, as I suggested when the estimates were made up, were taken from the lowest rates, the minimum rates, suggested by the Reclassification Commission.

Mr. ANDERSON. That is to say, the amount in the bill represents the lowest rates, not considering the bonus?

Mr. REESE. Yes. The committee may prefer to consider an alternate scale if this is held to be too high. I should like to get this amount for them, but I would accept an alternate scale at a different rate if the committee so prefers. Anything I could get for these men would be just so much to the good.

Mr. ANDERSON. How many additional lieutenants of the watch does this amount to? Are these two lieutenants of the watch all you have?

Mr. REESE. No; we have three lieutenants of the watch, one operating during the daytime and the other two on each of the night shifts. We are providing for two in place of those three, and the third would be dropped to sergeant of the guard. He would not lose any salary, but only a change of title. We propose a consolidation of the entire watch force, including the Forest Service and the Weather Bureau, and it would be necessary to have two lieutenants on duty. The uptown offices, or the offices on and north of the Avenue, are too remote to be handled by one lieutenant together with the other buildings of the department, and one lieutenant would have to take charge there of the buildings, including the Forest Service, the Homer Building, the Bush Building, and 1418 Pennsylvania Avenue. The other lieutenant of the guard would have supervision practically of all the buildings around the main building and in that neighborhood. That would be a more effective arrangement than at present and would centralize the entire watch force under one jurisdiction.

Mr. ANDERSON. You have six sergeants of the guard?

Mr. REESE. Six sergeants of the guard, at \$1,320 each, are submitted.

Mr. ANDERSON. That is a new arrangement?

Mr. REESE. Yes. That is also taken from the proposed scale of the Reclassification Commission. You must understand that the

lieutenant or watchman can not be on duty every day in the year all the year around. He is allowed three nights off a month, as against 52 Sundays that all the rest of us get off, as some adjustment. And, of course, the watchmen get sick at times and are entitled to annual leave, and for that reason we have to have substitutes. Heretofore as substitutes we have been using the better class of watchmen and skilled laborers, and this proposal is to have sergeants of the guard, two of whom would work on the central switchboard and the other four be available for any duty. Also, this provides some small leeway for a promotion in pay and in rank of the very deserving men, who are now, in my opinion, greatly underpaid.

Mr. ANDERSON. Six sergeants for 81 guards seems to me a rather disproportionate basis. I would not imagine you would need 6 sergeants for 81 guards.

Mr. REESE. Two of those sergeants have to serve all of the time on the central switchboards which receive calls from the watchmen throughout the night. The other four would be acting as lieutenants when the occasion arose, which is frequently.

Mr. ANDERSON. What is the total increase involved in this change?

Mr. REESE. The total increase involved in this change is \$33,000.

Mr. ANDERSON. Now, you have transferred one clerk from item 41, I think.

Mr. REESE. Yes; one clerk goes into that force.

Mr. HARRISON. He becomes a sergeant of the guard. He is one of the men, I understand, who is handling the telephone calls from the watchmen scattered throughout the department.

Mr. REESE. Yes; a telephone-switchboard operator.

Items 50, 51, and 52 are the watch force I have just been dealing with. They provide for dropping the places.

Item 53 is another case of mechanics transferred to lump fund for the shops, which we will come to in a moment. Item 54 is the same.

Item 55, no change.

Item 56, two skilled laborers, at \$780 each. They are requested in lieu of four messengers or laborers at \$600 each, which are dropped, and are intended to provide for the promotion of two extremely deserving colored men in the department, one of whom has been driver for the Secretary of Agriculture close on to 30 years with absolutely not a blemish against his record in the whole of that time. The other is a messenger to the Secretary of Agriculture, an exceptionally capable, industrious, and active man, who works very faithfully during the day and also does a great deal of overtime work. They are entitled to small promotions, we think, and both of them are clearly upon merit.

Mr. ANDERSON. Where do you drop these \$960 places, then?

Mr. REESE. We drop from item No. 63, at the bottom of the page, eight messengers or laborers, at \$600 each, decrease of five.

Mr. HARRISON. You are not dropping any \$960 places, Mr. Reese; you are dropping \$600 places.

Mr. REESE. We are dropping the \$600 places.

Mr. HARRISON. In other words, these men who you have been discussing are now getting \$960. They would be promoted to \$1,080; two men at \$840 would be promoted to \$960, two at \$720 promoted to \$840, two at \$600 promoted to \$720, and then you will drop two \$600 places.

Mr. REESE. Yes; at the end. Item 57 is the place I referred to before, where the man is doing skilled laborer's work, and the place should be changed from "clerk" to "skilled laborer." That is a change of title only.

Item 58, no change.

Item 59, one skilled laborer. That goes to the shop lump fund. The same is true of items 60 and 61.

Item 62, no change.

Item 63 we have just dealt with.

Item 64; that is a transfer of one messenger boy at \$720 from the statutory roll of the Division of Publications to the Secretary's roll, where he is at present detailed. This is merely to take him off of the Division of Publications roll and put him on ours, where he belongs and where he now works.

Mr. HARRISON. And involves no increase in salary and no change in the total number?

Mr. REESE. No change.

Item 65, no change.

Item 66, a decrease of 12. Two of those go by transfer to the roll of the Division of Publications and the 10 others are dropped. The 10 dropped are the 10 I referred to back here where we asked for 5 at \$960.

Mr. ANDERSON. What is the idea of transferring these two places to the Division of Publications?

Mr. REESE. They are working over there. It is a little difficult to explain sometimes how the messenger force is needed in different places, but sometimes one branch, like the Division of Publications, will be unable to secure messenger boys, and we manage to pick up boys and detail them over there. This is to transfer these two places to that roll.

Item 67, one messenger boy at \$360 is dropped entirely. Nobody wants it at that salary.

Mr. ANDERSON. As I understand, you have 10 vacancies in this \$480 class?

Mr. REESE. I thought there were 10; upon investigation I find there are 13.

There is no change in the following items, 68 to 72.

MECHANICAL SHOPS AND POWER PLANTS.

TRANSFER OF EMPLOYEES FROM STATUTORY ROLL TO LUMP-SUM APPROPRIATION.

Mr. ANDERSON. Take up item 73.

Mr. REESE. Item 73 proposes a lump sum for the compensation of the employees in the mechanical shops and power plant of the department in lieu of the present statutory roll. The present statutory roll is set out on page 16 and involves 98 employees, with a total compensation of \$110,420. The estimate is for a lump-sum roll of \$120,000.

The law, if enacted, will provide that the Secretary of Agriculture may, by transfer settlement through the Treasury, reimburse any appropriation made for the salaries and compensation of employees in the mechanical shops of the department from the appropriation

made for the bureau, office, or division for which any work in said shops is performed, and such reimbursement shall be at actual cost of such work for supervision and labor.

Mr. ANDERSON. How is that going to work out?

Mr. REESE. It will work out so that the roll of the shops will be a flexible one. It develops at times when there are statutory vacancies for carpenters that we do not need carpenters but do need a plumber, or vice versa, and this will enable the department to employ the identical kind of mechanical help it needs at the time and to drop it when it does not need it. Another object is to secure from any bureau of the department for which a particular job is done reimbursement for the cost of that particular job, not only for the material but for the labor.

Mr. ANDERSON. Does that reimbursement go back into this fund?

Mr. REESE. Yes; that reimbursement goes back into this fund. The department now has, and has had since 1913, authority to secure reimbursement from the bureaus for material purchased for them.

Mr. ANDERSON. All of these bureaus have mechanical forces of their own, do they not?

Mr. REESE. Some of them, not all, have small expert mechanical forces. The men are more technicians than they are mechanics. They are engaged in special lines of very high-grade work.

Mr. HARRISON. They are men engaged on instrument repair work and work of that sort as distinguished from carpentry, plumbing, electrical, and other similar work.

Mr. ANDERSON. Unless I am mistaken there are mechanics, carpenters, and plumbers all through these estimates in every bureau—instrument makers along with the rest.

Mr. REESE. I have in mind the Bureau of Plant Industry, the Bureau of Public Roads, and the Bureau of Animal Industry, where there are men who are much more than mechanics. They are engaged in high-grade technical work, you might say. They are not included in this shop force.

Another object of this place is to permit us to get better men by paying better wages. Our men have been underpaid for years. The wages have not been comparable with those paid in some of the other Government departments, and most particularly not comparable with the wages paid outside. I wish the committee would glance for a minute at this blue print. It shows the comparative scale of wages paid to the various classes of mechanics in the Department of Agriculture, the navy yard, and in the commercial world from 1917 to 1920. In the class of engineers there has been in the Department of Agriculture a small increase. There are only two or three such men. For the firemen I am not asking anything; that has been taken care of. But when you come to these classes of mechanics I wish you would observe that the curve for the Department of Agriculture from 1917 to 1920 is a straight line, indicating no increases.

Mr. ANDERSON. Of what class of mechanics are you talking?

Mr. REESE. Carpenters are shown on this particular chart.

Mr. ANDERSON. That is based on the statutory salary without the bonus?

Mr. REESE. Without the bonus. For electricians and painters, observe that fact that the lines for the Department of Agriculture are

straight lines. From 1917 to 1920 there have not been any increases. Here is a good instance. Plumbers for the Department of Agriculture show no change in those years. The navy-yard scale has gone up from about \$1,350 to \$2,000 and \$2,100. The commercial scale has gone up, as shown by this dotted line here, from about \$1,575 to \$2,500.

Mr. ANDERSON. In making those scales was any consideration given to the difference, if any exists, due to sick leave and annual leave?

Mr. REESE. No. I hardly think that is a factor of the wage situation at all. That is working conditions, you might say, and of course our men have those privileges.

Mr. HARRISON. The only difference between the leave privileges in the Department of Agriculture and the navy yard is that our employees have 30 days' sick leave, in case of sickness, whereas the Navy Department employees have only 15 days. The navy-yard employees receive 30 days' annual leave and they also get the bonus.

Mr. BYRNES. What is the object of this language here?

Mr. HARRISON. One of the principal objects is to put the mechanic shops on a business basis, so that they can conduct their work as a business organization and make a charge for every piece of work done for a bureau. It would have this advantage also: It would tend to hold down the requests for work to be done in the shops, because the bureaus would be more careful in making requests when the cost of the work must be paid out of their own funds.

The other object is to provide a more flexible organization and better compensation for the men in the shops. At one period of the year there may be a great deal of cabinetwork to be done in the shop and at another time there may be a lot of plumbing work to be done but the present arrangement provides for no flexibility whatever.

Mr. ANDERSON. But this flexibility costs us money by not only involving this amount which is appropriated for this work but by increasing the work in the other bureaus you increase it to an amount which we can not possibly know.

Mr. HARRISON. That is true, but at the same time we are not asking for a specific increase in any of the bureaus to take care of what they would have to pay the shops for the work that is done for them. There is an increase in this appropriation here of approximately \$10,000. That gives us that much leeway. If the committee is not willing to do that, we certainly hope you will give us exactly the same amount that is transferred from the statutory roll. That in itself will give us flexibility. The flexibility comes from the fact we get paid by the bureaus for the work done for them. That amounts to about \$50,000 in a year. In other words, we would have that \$50,000 leeway.

Mr. ANDERSON. You have not made any reductions in any of the lump-sum appropriations or in the statutory rolls of the bureaus on that account?

Mr. HARRISON. No; there would not be any reduction in their rolls. They would pay the money into the Secretary's office and it would be credited to this fund. That money would be used for the same purposes during the remainder of the fiscal year.

Mr. ANDERSON. But you still keep the same number of mechanics over there and the same number of carpenters and the same number of plumbers.

Mr. SWENSON. Not necessarily. There are certain seasons of the year when we have more mechanics than are necessary of one kind and we might need mechanics of another kind.

Mr. REESE. Am I not right that under this proposition it is proposed to pay an hourly rate of wages and to require eight hours' work a day?

Mr. SWENSON. To pay an hourly rate.

Mr. REESE. And that, in itself, I think, will enable us to reduce the number of mechanics.

Mr. BYRNES. The work done now in these various bureaus you say you are going to have done by the shops, but you will still have in each bureau a force of mechanics?

Mr. HARRISON. No; not engaged on the same class of work. The Weather Bureau and the Forest Service, however, on account of their physical location, will have one or two carpenters and other mechanics, because they have need for their services all during the year.

Mr. BYRNES. You are putting back then into the Secretary's office amount you estimate to be how much?

Mr. HARRISON. It is about \$50,000.

Mr. BYRNES. Possibly I do not understand it, but then you really will have for this department here \$120,000 plus \$50,000?

Mr. HARRISON. Plus \$50,000.

Mr. BYRNES. That would be \$170,000.

Mr. HARRISON. But we are not asking a specific appropriation of \$170,000.

Mr. BYRNES. But if you appropriate any funds to the various bureaus and they come here, you are going to spend \$170,000 instead of \$110,000 now.

Mr. HARRISON. Yes.

Mr. BYRNES. You do not call that saving money do you?

Mr. HARRISON. We are not calling it a saving of money. In the first place, the salaries of the men in the shops are ridiculously low. Some of the mechanics get as low as \$900 a year and some of this money will be used to increase their salaries.

Mr. BYRNES. I can see some argument to be made in favor of what you call flexibility—the advantage to be derived from having a lump sum from which to employ a certain class of mechanics at one time that you would not want at another.

Mr. HARRISON. Yes.

Mr. BYRNES. But every time a proposition is made to achieve that advantage, which doubtless is desirable, it inevitably involves an increase of money. I hope at some time somebody will present one asking for the same sum of money and giving to you the advantage of making it flexible, so that the question can be considered on its merits and we can make some defense of the proposition instead of handicapping it right off the bat.

Mr. REESE. The department would be willing to have this \$120,000 lump fund reduced to \$110,000. We can get along with that, I suppose, and come out.

Mr. BYRNES. If you are willing to have it, why do you ask for \$120,000?

Mr. REESE. Because it is a very difficult proposition to figure this all out in advance.

Mr. BYRNES. You are figuring it out in advance now.

Mr. HARRISON. I will answer that for you: The \$120,000 plus what we get for the bureaus would enable us to give the men in the shops compensation approaching the navy-yard scale.

Mr. BYRNES. That is the idea?

Mr. HARRISON. That is what it amounts to.

Mr. ANDERSON. And you would have fewer men at higher salaries?

Mr. HARRISON. We would have fewer men and give them better compensation.

Mr. ANDERSON. Wouldn't you have substantially the same men as you have now?

Mr. HARRISON. Yes; if we can get better men than we are having to employ at these rates of \$900 and \$1,000. under existing conditions, the numerical force will be less during different periods of the year depending upon the work to be done. Mr. Byrnes, we are not asking you to increase the roll of any bureau on account of the fact that they will have to make these payments.

Mr. ANDERSON. We can not tell that, because there is an increase asked for in every bureau without any exception.

Mr. HARRISON. I can say this, that the estimates were made up without any knowledge on the part of the bureaus that this recommendation would be made.

VACANCIES IN STATUTORY ROLL OF SECRETARY'S OFFICE.

Mr. ANDERSON. Are there any places now vacant on the statutory roll of the Secretary's office?

Mr. REESE. Yes.

Mr. ANDERSON. What are they?

Mr. REESE. There are some places as stenographers vacant in the solicitor's office—not stenographers, but law clerks. I should say.

Mr. ANDERSON. I wish you would indicate just what places there are that are vacant in the Secretary's office now.

Mr. REESE. In the solicitor's office there are three law clerks, at \$1,800; and two, at \$1,600.

Mr. ANDERSON. How long have they been vacant?

Mr. REESE. I can not tell you, sir; but for some time. The solicitor has been unable to get lawyers to accept these low salaries. If you would like to have that put into the record, I can get it for you.

Mr. ANDERSON. I would much prefer to have a list of the places that are vacant on the Secretary's roll.

Mr. REESE. All right, sir.

Vacant places on statutory roll, office of the Secretary.

[Dec. 15, 1920.]

Designation.	Salary.	Vacancies.
Law clerk.....	\$2,000	2
Do.....	1,800	3
Do.....	1,600	2
Electrical engineer and draftsman.....	1,200	1
Cabinetmaker or carpenter.....	900	1
Painter.....	1,000	1
Watchman.....	720	1
Messenger boy.....	480	13
Do.....	360	1

RISON. You ought to indicate they are not necessarily vacant; we do not need them; most of them are in process of being filled, or we are trying to fill them.

PERSON. But the fact still remains you are getting along without them now.

RISON. We are getting along without them temporarily, as we get along during the year, temporarily, when employees are on leave.

PERSON. Are there any persons employed in the Secretary's office whose salaries are paid out of lump-fund appropriations of other bureaus?

E. Yes, sir.

PERSON. How many?

E. I do not recall the exact number.

PERSON. Will you put a statement in the record showing from other bureaus to the Secretary's office, and the amount which they are paid?

E. Yes.

The statement is as follows:)

Carried on lump-fund rolls of bureaus and detailed to the office of the Secretary, including the office of the solicitor, mechanical shops, office of the chief clerk, personnel office, etc.

ratory mechanic (painter) and seven charwomen, employed by the Secretary's office, working in them, but whose work is supervised by the mechanical engineer and the chief clerk, respectively, are not included in this statement.

MISCELLANEOUS EXPENSES.

INCREASED COST OF COAL.

E. I have a short statement to make with respect to the appropriation for miscellaneous expenses, on page 219 of the Book of Estimates. The language of the appropriation item is not correct. The amount is increased from \$136,000 to \$201,000, for the same purposes, the first being what we estimate is a very

necessary provision for the increased cost of fuel for the fiscal year 1922. That is a subject on which nobody has any very definite information. The facts are that in this calendar year we were paying, prior to May 1, \$8.06 per ton for coal. In September, the price was raised to \$9.60 a ton, and effective November 24, the price was again raised to \$10.44 per ton.

Mr. ANDERSON. Are you going to have a deficiency this year?

Mr. REESE. I would not be surprised if we did—a small one. We have nothing to do with the coal contract or negotiating it, but take the coal from the Bureau of Mines at whatever price they bill us. We estimated at the beginning of the fiscal year that \$54,000 would see us through. If the price remains even at \$10.44 a ton, or goes higher, it of course, will not see us through. This provision of \$30,000 increase in the cost of fuel for the fiscal year of 1922 is a precaution we are taking to make ourselves safe, if the cost of fuel goes up again and again, as it may, for all we know. This will provide for our annual consumption of about 8,000 tons of coal at a little less than the current price of \$10.44 per ton.

FOR EXTENSION OF COAL BUNKERS.

Item B is an estimate of \$10,000 for extending the coal bunkers. The coal bunkers in the department were built at our power plant when the white marble buildings were erected some 10 years ago. They are wholly inadequate. The present coal bunker is 39 feet by 14.6, and will carry about a three days' supply of coal at the best. What we are proposing to do is to extend the coal bunkers under the vacant ground adjoining the building. Ten thousand dollars is probably the minimum estimate for the cost of that work.

I might add that the Bureau of Mines has urged us to provide increased bunker capacity, so that they can deliver coal faster. As it is, they have to keep their trucks running to us practically every day, and if we can provide additional bunker space they can send a sufficient supply to us and then use the trucks to haul coal elsewhere. There is a misprint in the note here. It says "heretofore coal in excess of three tons has had to be dumped on the lawn." That should be "three days' supply."

FOR REPLACING STEAM LINE FROM POWER PLANT TO GREENHOUSES.

Item C is for \$10,000 to replace the steam line from the power plant to the greenhouses. That line is practically worn out. I think Mr. Swenson, you are not using it now because of the leaky condition.

Mr. SWEHSON. We are not using it now.

Mr. ANDERSON. When was it built?

Mr. REESE. About 1908.

Mr. ANDERSON. If you are not using it now, what are you doing for heat?

Mr. REESE. We have a small supplemental plant at the greenhouses for taking care of that. One freezing night would destroy everything at the greenhouses if we did not have anything to take care of that possibility. This item is to replace that steam line of 1,500 feet of 6-inch pipe, and then to shut down the supplemental plant whenever it is not absolutely needed or except in cases of emergency.

Mr. ANDERSON. You have no indication from the Bureau of Mines as to what you will have to pay for coal next year?

Mr. REESE. We have not. They can not tell us.

Mr. BYRNES. You had an increase in this item last year over what you had in 1913 and 1914 of a considerable sum, did you not?

Mr. REESE. Yes.

Mr. HARRISON. That was specifically for some repairs to the powerhouse.

Mr. BYRNES. And you are holding that and then asking for \$65,000 additional?

Mr. HARRISON. We did not hold that. We dropped it out after the repairs were made. As you will see, the appropriation this year is only \$136,000 as against \$175,000 last year.

Mr. BYRNES. Oh, yes; I see.

Mr. HARRISON. We dropped it out after the repairs were made.

Mr. ANDERSON. If you can get by with the amount you have for coal this year, why do you expect you will need more money next year?

Mr. REESE. If we can get by this year, but it is not a certainty that we can. A small deficiency due to the increased cost of coal will, I think, have to be submitted. It has been going up on us all the time; we have no power to regulate it; there is no forecast possible, and this \$30,000 is put in here as a safety.

Mr. BYRNES. Don't you believe in the things that are purchased under this fund—your dry goods, soap, towels, and stuff of that kind—that there will be some reduction in the price you pay after July 1 of next year from what you pay now?

Mr. REESE. It may be so, sir, but who can tell? The prices of all commodities may come down, but who knows?

Mr. BYRNES. You are not counting on that at all in your estimates?

Mr. REESE. On a reduction in prices?

Mr. BYRNES. Yes.

Mr. REESE. No.

Mr. BYRNES. On any reduction in price over what you paid last year?

Mr. REESE. No. I do not see how we can.

Mr. BYRNES. You are not a very optimistic gentleman.

Mr. REESE. I am not very optimistic on the prices of things we have to buy out of this appropriation.

FOR PURCHASE AND INSTALLATION OF BOILER FOR POWER PLANT.

The final item in that increased estimate is \$15,000 for the purchase and installation of a new boiler in the power plant. The boiler equipment of the Department of Agriculture, most of it, is pretty old. We have two 300-horsepower Sterling boilers and one 17-horsepower Heine boiler and three old Scotch marine boilers. The Heine boiler is a new one; we installed that last spring and summer. It is a boiler we secured from the Emergency Fleet Corporation. With that and with our two 300-horsepower Sterling boilers we are now getting along by using them at full capacity, and leaves us with no leeway at all. In case of a breakdown in either

one of those boilers we would be either partly without heat or have to run those three old Scotch marine boilers that have been installed for approximately 10 years and were not suitable for stationary use at the time they were installed.

Mr. SWENSON. I would like to state that the inspectors of the Department of Commerce have practically condemned those boilers at different times so that we are at considerable risk in running them at all.

Mr. ANDERSON. How many boilers have you down there now, all together?

Mr. REESE. Six in the main power plant, two in the greenhouse plant.

Mr. ANDERSON. You are proposing to replace two of them?

Mr. REESE. We are proposing to replace three of them.

Mr. ANDERSON. You use three at a time?

Mr. REESE. We replace all three of those Scotch marine boilers by one new one. Then we will have an adequate plant and a safe plant. We are quite uneasy about using those Scotch marine boilers any longer.

Mr. ANDERSON. Have you any estimate of the cost of a new boiler?

Mr. REESE. The estimate we made of \$15,000 is based upon proposals which I got last spring and did not use. The cheapest we got was \$15,000 for boiler and installation.

Mr. SWENSON. For the boiler itself the estimate was \$8,000, and the rest of it was for the installation and brickwork and the chimney.

Mr. HARRISON. Perhaps you would be interested in knowing that the repairs at the power house, on which we spent \$33,000, are saving approximately 1,000 tons of coal a year.

Mr. ANDERSON. Not in the estimates, at any rate.

Mr. HARRISON. They are saving that much just the same.

FOR RENT OF BUILDINGS IN THE DISTRICT OF COLUMBIA.

Mr. REESE. On page 221 there is no change in the rent appropriation item, but since these estimates were made up I have found it necessary to take up the matter of the rental of the building occupied by the Bureau of Public Roads on Fourteenth Street. The lease expires on the 30th of next June and a new lease is necessary. In my judgment it is highly desirable for the department to retain that building for the Bureau of Public Roads. It is a bureau of great importance now, is desirably located, and the rental up to the present time has been only \$9,500 per year. Figuring that on the assessed valuation of the building and the real value, the owners, after paying taxes, have been getting a return of about 3 per cent upon the real value of the building.

Mr. ANDERSON. Your estimate here shows \$10,700 for the Bureau of Public Roads.

Mr. REESE. Yes.

Mr. BYRNES. What other buildings have you?

Mr. HARRISON. They are all indicated on page 314 of the estimates; all the buildings rented by the department in Washington. You will find the Willard Building about the sixth or seventh item down the list: Bureau of Public Roads, 36,000 gross square feet of floor space; rental, \$9,500.

Mr. ANDERSON. \$9,500; but there is nothing for the Bureau of Public Roads that accounts for the difference.

Mr. REESE. The Bureau of Roads is a separate proposition. For part of a building, \$600 is included there and then a garage now occupied by the Bureau of Public Roads at \$1,200. That figures out the total amount does it not? In the list down below here is a garage, rear of 1806 E Street, \$1,200. As a matter of fact, that is used by the Bureau of Public Roads. That accounts for the \$10,700, which is, as stated, the estimated amount which will be paid during 1921 for quarters occupied by the Bureau of Public Roads. For building on Fourteenth Street NW., occupied by the Bureau of Public Roads, as I stated, the lease expires on the 30th of June, 1921, and a new lease is necessary. I have been negotiating with the owners informally, and they advise me they believe an increase in the rental of \$2,500 a year is only fair. That is based upon the statement that they have to pay a tax bill now, under the increased rate, of \$3,200 per annum. That would reduce their net return to \$9,800, which is almost exactly 4 per cent on the real valuation.

Mr. ANDERSON. What is the assessed valuation?

Mr. REESE. The assessed valuation is \$161,000. On the usual basis that makes the real value \$240,000, or a little more. Five per cent on that is exactly \$12,000, which is the rent they are asking, and they have nearly \$3,200 taxes to pay out of that. It occurs to me a rental of that figure, whereby they would get just about 4 per cent after the taxes are paid, is a reasonable proposition. I therefore had it in mind, when I appeared before this committee, to ask it to authorize an increase in this appropriation of \$2,500 to provide for that very necessary rental.

Mr. ANDERSON. Are you using any part of the emergency buildings now?

Mr. REESE. Yes, sir; a large part. The Department of Agriculture, in July, 1919, was directed to transfer certain offices to the Council of National Defense Building, and did so, at some considerable expense. In August, 1920, it was discovered we would have to move out of the Council of National Defense Building because it had to be torn down, and we were directed to move those offices to Building F, which is one of the buildings on Seventh Street. They have now all been transferred to Building F. In addition to that, we have one office of the Bureau of Markets in what is known as Building C, another of the temporary buildings adjoining.

Mr. ANDERSON. But these changes have not enabled you to reduce your rental item at all?

Mr. REESE. The change in July, 1919, reduced our rental appropriation by about \$17,000.

Mr. BYRNES. I notice you have one building here, Farm Management, 202 Fourteenth Street, for which you are paying 72 cents a square foot, and for the States Relations Service 75 cents a square foot.

Mr. REESE. You are looking at the last column, Mr. Brynes?

Mr. BYRNES. Page 314.

Mr. REESE. Yes. That is something that never appeared in these estimates before. This gives the estimated cost of maintenance, upkeep, and operation of those buildings per square foot of surface, as required by law.

Mr. BYRNES. What is the explanation of this being so much higher than the building the Bureau of Public Roads occupies? That is only 57 cents.

Mr. REESE. The building occupied by the Office of Farm Management comprises a little over 14,000 square feet of floor space. That is the answer. That is to say, the Office of Farm Management has to have an elevator operator and watchmen at all times. The same thing is true of the Bureau of Public Roads; they have an elevator man and watchmen. When these and the other items of cost of upkeep are all added together, you would divide the total for the Bureau of Public Roads by a factor of over 30,000, and the Office of Farm Management by only 14,000. In other words, these smaller buildings are more expensive per square foot to keep up than some of the larger ones.

Mr. BYRNES. But I notice that, taking your 1312 B Street SW. building, for the States Relation Service, your annual rental per square foot, without taking into consideration the cost of maintenance, is 39 cents, as against your Public Roads Building here at 25 cents. It is the fourth item from the bottom of your list, 1312 B Street, States Relation Service. That is the highest rental per square foot.

Mr. HARRISON. No; there is one at \$1.15.

Mr. BYRNES. Yes; I overlooked that—the Munsey Building. What are you doing with an office in the Munsey Building?

Mr. REESE. That is the local office for persons who desire to meet the Bureau of Animal Industry meat-inspection officials. It is maintained for the Bureau of Animal Industry meat-inspection service to transact their local meat-inspection service in the District of Columbia.

Mr. BYRNES. It is the most expensive building in town; you know that, don't you?

Mr. REESE. You see what we are renting there, 366 square feet, at an annual rental of \$420. It is only one office room.

Mr. BYRNES. Is it necessary to keep it there?

Mr. REESE. The Bureau of Animal Industry so hold.

Mr. BYRNES. What is your opinion about it regardless of what they hold?

Mr. REESE. I think it is. There is some slaughterhouse inspection in the District of Columbia, and a local office uptown is necessary.

Mr. BYRNES. Do the slaughterhouse people have to go to the Munsey Building?

Mr. REESE. Not necessarily, but it facilitates the transaction of business.

Mr. BYRNES. Who approves the rental before it is consummated?

Mr. REESE. The Secretary.

Mr. BYRNES. It comes to the Secretary's office?

Mr. REESE. Yes; final approval does.

Mr. BYRNES. You do not allow a bureau chief to go out and rent any office he desires? I will say for him that he picked out the most expensive building in the city of Washington, which has been demonstrated in our hearings, of all the other buildings.

Mr. REESE. Isn't he getting a rate which is pretty low there—\$1.15 per square foot?

Mr. BYRNES. Do you call that low—\$1.15 per square foot? If you do, you must feel very proud of every other bureau here, the highest outside of that being 39 cents.

Mr. REESE. Some of these buildings we have here at low rentals are pretty punk old buildings.

Mr. BYRNES. You do not call the Willard Building a punk old building?

Mr. REESE. No. I did not refer to the Willard Building in this connection.

Mr. BYRNES. You have just been highly recommending it for an increased rental.

Mr. REESE. In my opinion, the rental of \$9,500 we have been paying for the Willard Building is a very reasonable one, indeed.

Mr. BYRNES. Of course, if you take the Munsey Building as a standard, it is exceedingly low, and I think it is as compared with the other items there. I wanted to ask you about this 39-cent building down here, 1312 B Street SW.; have you a long lease on this building?

Mr. REESE. No; under the law the only lease we can make is a lease for a year, with an option for renewal.

Mr. BYRNES. In this Munsey Office Building, you have that leased for a year?

Mr. REESE. Yes, sir.

Mr. BYRNES. What is the real objection to having those people have their office where the Agricultural Department is—over in that section where all the other bureaus are located and where the people of the city of Washington and other places throughout the country can find their way down there?

Mr. HARRISON. This office has no business relations with other sections of the country. It is the Washington station of the Bureau of Animal Industry; just as we have a station in Chicago. It is a field station as distinguished from the Washington office, and the local business people in Washington have relations with it in connection with the meat inspection and other services. We have not been able to select space wherever we wanted it during the last three or four years; we have had to select it wherever we could get it. You know what the housing conditions have been here.

Mr. BYRNES. What I am asking is what chance we have of selecting it next year.

Mr. HARRISON. In any building in that section of the city you will have to pay from \$1 to \$1.50 per square foot for it or more.

Mr. BYRNES. In making that statement have you made an investigation of it and know it is a fact? I know by a careful investigation we have found out by transferring those bureaus to the Southern Building and the Munsey Building they go to the highest-priced buildings in the city.

Mr. HARRISON. The commission on public buildings has complete control over Government space in Washington and has been over all these cases; they have all been reported to it.

Mr. BYRNES. And they have approved your staying in the Munsey Building?

Mr. HARRISON. They have not objected to it.

Mr. REESE. May I point out here that this appropriation for rent is well safeguarded by the following provision:

Provided, That only such part of this sum shall be available to pay rent for space which can not be furnished by the Public Buildings Commission in Government buildings located in the District of Columbia.

Mr. HARRISON. And the Public Buildings Commission passes on every item expended under this appropriation.

Mr. BYRNES. That commission now approves the rental of these properties?

Mr. HARRISON. Yes, sir. We have submitted to them many detailed statements during the last year. If they order us to move out of a particular building, we have to move out of that building. And, with respect to the particular office to which you have referred, from the standpoint of good business administration, it ought to be located in the business district of Washington.

FOR CONSTRUCTION OF VAULT FOR REFRIGERATING PLANT, BUREAU OF ANIMAL INDUSTRY.

(See p. 180.)

Mr. REESE. There is one special item here for a refrigerating plant, on page 308. While that comes as part of the Bureau of Animal Industry, too, possibly the mechanical superintendent or myself could throw a little light on the subject. The department now has a small refrigerating plant in the east wing of one of the white marble buildings. It is a risky proposition. The ammonia plant more than once has broken down and come pretty near filling the whole place up with ammonia fumes. We would like to get out of there for that reason alone, and, besides, as this note shows, it is a damp place and hard on the installation. This is a proposal to construct a vault outside of that building, under the bank at the east end, underground. The comptroller would not permit us to do that on a previous occasion, because of the law which requires specific authority from Congress for any construction on Government parks. This is a request of Congress to authorize the construction and to appropriate \$25,000 for the purpose.

Mr. ANDERSON. What is the idea of having that refrigerating plant over there in those buildings?

Mr. REESE. It is used for the experimental refrigerating work, largely, of the dairy division, which is in that building, and the meat-inspection work also. There is a considerable amount of refrigeration work necessary for perishable materials that are stored there. This, as I say, comes really within the scope of the work of the Bureau of Animal Industry.

Mr. SWENSON. It is in a very bad location, really, and is dangerous to human life.

Mr. ANDERSON. It would not be in any better location to put it underground at the end of the building, would it?

Mr. SWENSON. Except that it is easier to get out of the building in case of accident.

Mr. ANDERSON. But you have the same dampness you are complaining about?

Mr. SWENSON. Not to any great extent.

Mr. HARRISON. It would be specially constructed, so as to eliminate dampness.

Mr. SWENSON. It would not have to be more than 10 or 12 feet underground, whereas it is considerably more than that now, and in the east wing, where there is a chance of occasional steam leaks, and it is also below the sewer line.

Mr. ANDERSON. It is at the east end of the east wing, and where do you want to put it now?

Mr. SWENSON. Right outside, just a little farther east from where it is.

Mr. HARRISON. It is now located in the subbasement of the structure there.

Mr. ANDERSON. What will that do to the architectural part of the building? Will it appear above the surface?

Mr. SWENSON. No.

Mr. HARRISON. As you know, the first floors of these laboratory buildings are below ground, and the vault would be built under the bank outside of the building and would not appear above the ground, except for the ventilator.

Mr. ANDERSON. I may say I am not very much impressed with the idea of putting a refrigerator plant over there next to that building.

Mr. REESE. It won't show very much.

Mr. ANDERSON. You will have to tear it out inside of 10 years.

Mr. REESE. The present location is a menace to the individuals working down there.

Mr. ANDERSON. But you are not improving it any by this.

Mr. SWENSON. You will get rid of the ammonia fumes through the building when the compressor breaks.

Mr. REESE. Human beings have to work there at the risk of being overcome by ammonia fumes; and not only that, but the employees in the other part of the building are exposed to the same risk.

Mr. ANDERSON. Why don't you put it over on the Arlington Farm site?

Mr. REESE. The Dairy Division laboratories are installed in the same building, where they need refrigeration, and by putting it outside here nobody will be subject to any risk at all except such persons as have to go into the refrigeration plant for whatever purpose is necessary. As it is now, everybody in the building has to run the risk of the ammonia fumes which may escape. And it has actually happened. That is to say, it has broken down at night.

Mr. ANDERSON. I am not criticizing the desirability of taking it out of there; what I am criticizing is the desirability of moving it to where you want to put it.

Mr. REESE. As Mr. Harrison pointed out, the basement floor of that building is down below the bank, and this plant is located even below that. Outside of the east end, that bank runs up 15 or 20 feet, and it is proposed to put this plant into that bank. It will be entirely underground, covered over and sodded over, and would hardly show except for the ventilator through the top, would be conveniently located for the offices needing refrigeration, and located entirely outside of the building.

Mr. ANDERSON. Then we need not take any stock in this bunk about dampness?

Mr. REESE. Oh, yes; it is damp.

Mr. HARRISON. What Mr. Anderson means is that it will still be underground. But can it not be so constructed as to avoid dampness?

Mr. SWENSON. Practically. It is 20 feet underground now, and with the proposed plan it would be only 10; and it is impossible to ventilate it in its present location, and it would be possible to ventilate it if constructed under the bank.

Mr. REESE. I think when the scientific men of the Bureau of Animal Industry come before you they will be able to explain the scientific aspects of this better than we can.

MONDAY, JANUARY 3, 1921.

OFFICE OF FARM MANAGEMENT.

STATEMENT OF MR. H. C. TAYLOR, CHIEF OF THE OFFICE OF FARM MANAGEMENT, DEPARTMENT OF AGRICULTURE.

READJUSTMENT OF AND INCREASES IN SALARIES—TRANSFERS FROM LUMP-SUM TO STATUTORY ROLLS.

Mr. ANDERSON. We will take up your statutory roll.

Mr. HARRISON. Do you want any discussion of the change in the name? I presume you understand that.

Mr. ANDERSON. That is simply a change from "office" to "bureau?"

Mr. HARRISON. Yes; and it does not involve any change in the character of the activities of the office and does not result in any increase in the expenditures.

Mr. ANDERSON. I think your first increase is in item 5, on page 20.

Mr. TAYLOR. Those are transfers from the lump sum, and all of those transfers are at the salaries they are getting at the present time. There are two increases carried in the statutory roll. One is for the photographer.

Mr. ANDERSON. What item? Your first one, evidently, is in 13—messenger or laborer.

Mr. TAYLOR. Yes; there is an increase of \$180 there. He is the janitor of the building, really. He has been working for a great many years at the same salary, and it is thought he should have that increase. No. 20 is the other increase, making an increase of \$400 for the photographer.

Mr. ANDERSON. You propose to increase him from \$1,400 to \$1,800?

Mr. TAYLOR. From \$1,400 to \$1,800.

Mr. ANDERSON. How does that compare with other photographers in the department, Mr. Harrison?

Mr. HARRISON. Some of the photographers in the Department get around \$1,800 or \$2,000. Some get less, but we have suggested increases for them in these estimates.

Mr. TAYLOR. The transfers are summarized at the bottom of page 21.

Mr. ANDERSON. Do these transfers include all of the clerks now carried in your lump sum permanently?

Mr. TAYLOR. Practically all of them. This is the principle we operated upon: Every person of clerical standing whose position was established and was something that was likely to be permanent we transferred to the statutory roll. There were two or three cases where it was unsettled and we left them on the lump sum. It is furthermore true we have not provided here statutory positions for the increased number of people we are hoping to employ next year and who, after next year, would be transferred to the statutory salary; but we are asking for that increase in the lump sum, with the expectation that we will do the best we can in employing people. Then when we once have them and know what they can be gotten for, we will transfer them to the statutory roll in the next year's estimates. Are there any more questions regarding the statutory list?

Mr. ANDERSON. No.

FOR INVESTIGATION OF COST OF PRODUCTION OF FARM PRODUCTS.

Mr. TAYLOR. Item 26 is the next important item from our point of view.

Mr. ANDERSON. You are eliminating the language in item 25 in the present bill and proposing to substitute the language of item 26?

Mr. TAYLOR. Yes; as more completely descriptive of the work of the reorganized office as it was reorganized under the plan drawn up by the committee on reorganization before I took charge of the office. As it is outlined here, it simply names the main subdivisions of the work rather than a more general statement. If there are no questions regarding the terminology of the statement, I suppose the thing you are next interested in is the way in which it is planned to distribute the lump sum among the different lines of work.

From a summarized statement which I have here, you will note the seven subdivisions of the research work: Cost of production, farm organization, farm finance, farm labor, agricultural history and geography, land economics, and farm-life studies. The largest increase we are asking for is, of course, in the cost of production studies.

Mr. ANDERSON. As this proposition is relatively new, I suggest you give us sort of an outline of the organization on this cost of production work and then tell us how you propose to expend the amount.

Mr. TAYLOR. Mr. F. W. Peck is in immediate charge of the cost of production studies and also of the farm organization studies. And I wish to say, at the outset, that from our point of view it is practically impossible to draw a line between cost of production studies and farm organization studies, because the major purpose of cost of production studies, as we understand them, is improvement of farm organization.

Mr. ANDERSON. When you refer to farm organization, you mean organization of the farm itself?

Mr. TAYLOR. Yes; of the farm itself from the standpoint of increasing profits—reducing costs and increasing profits of the farm. At the present time we have nine scientific men employed in the cost of production work. During the summer when we had the crews working in the field, we had five additional men we could employ for the summer and not carry them the whole year. These numbers refer to the staff with headquarters in Washington. It has been found highly desirable to carry on much of the cost of production work in cooperation with the various States. For instance, in the beef-cost studies which are being carried on in five States at the present time (in Indiana, Illinois, Iowa, Nebraska, and Missouri), in each of those States we are in cooperation with the experiment station so that the work in those States is a joint product.

Mr. ANDERSON. These beef studies are carried on at the experiment stations?

Mr. TAYLOR. They are carried on in this way: The experiment station is the headquarters for the work in the State, and the young man carried on our pay roll has his headquarters at the experiment station and his traveling expenses are paid by the State. These young men follow up and visit the farms every month so as to keep a check on what is going on. The farmers do a good deal of the record work themselves, but these young men have to be at the farms often enough to make sure the records are being well kept and to help the farmers on many points, like weighing up. The headquarters are at the experiment stations in each of the States, but the results of all five are brought to Washington and tabulated, so that they will all be tabulated in the same way; and the results are available for both the State and the Federal Government.

Mr. RUBEY. You say the young men have to be at these farms: Do you do all this work on one farm?

ACTIVITIES.

Mr. TAYLOR. No. There are 25 farms in each State. We started off in this way; we recognized we must know the whole business of the farm as well as simply the cost of beef production, so we asked the people at the experiment station who were cooperating with us to select the area in the State (take Iowa, for instance; the studies are made in Pottawattamie County), where the cost of production studies should be made. Then a joint crew made up of men from our office and from the State went in and took a survey of about 100 farms in that area, so as to get all kinds of farming and cover the agriculture in that area, and then 25 of those farms, on which they were feeding two cars or more of cattle, were taken, and the young man selected for that work continually visited those 25 farms. He must get out to each one of those farms at least once and often twice a month, so as to help weigh up and check the inventories and purchases of feed and the estimates of daily feeding. Now, all together, there are 19 agents and clerks on the State cooperative work in all lines of cost studies. Sometimes we pay \$25 on the salary of a clerk who is helping with this work at the station. All together there are 19 State cooperators on this work and, in Washington,

there are 19 clerks continually tabulating the cost results. This does not refer simply to the beef-cost studies. We have carried on studies in cotton costs, wheat costs, tobacco costs, potato costs, beef costs, and rice costs. The men have just returned with 250 records from the rice region of Louisiana, Texas, and Arkansas.

Our plan for enlarging this work is, of course, not to change the type of our organization, but to increase the quantity of work that can be done. With the increase in the quantity of work that can be done, we can speed up the work a great deal; that is, we can speed up the time in which the records can be gotten and tabulated, because of the larger crew. Take these 250 records of the rice costs. I just received a letter from Senator Ransdell asking if these results could not be made available at once. These records are just in. We have calculated that if the 19 clerks we have at the present time could all be put on those records the results could easily be gotten out in three weeks; that is, without any accident of any kind and with all of the 19 on the job every day it could be done in 15 days. But we would not want to promise the Senator we could get it out within that time, because of the other things that might happen. To get this out in that time it would mean to lay the wheat-cost studies on the side, that have recently been brought in, and the potato-cost studies, and to turn all of our attention to rice.

Mr. ANDERSON. How are these cost studies hooked up with farm management and organization? I can not see very much advantage in a purely statistical determination of costs.

Mr. TAYLOR. They are hooked up in this way: As I indicated, since I have taken charge of this work, I have insisted that in every case where we make a study of a given product, like wheat or cotton, that we get a complete record of the farm, so that we will know the total receipts and total expenditures of the farm as a whole and the profits of the farm as a whole, and the other sources of income. Of course, taking cotton and wheat, where these items are the principal sources of income, it is relatively simple to make these cost studies and show the relation of the one crop to the profit of the farm as a whole. But, in the corn belt, where you have corn, oats, and clover, and these crops become the basis of a live-stock industry, it is practically impossible to say the oats cost so much, the corn cost so much, and the clover cost so much; but you can find what the corn, oats, and clover cost and then you can find what they can be used for to the best advantage. Take oats, for example: The question arises as to whether oats, barley, or spring wheat pay best—and here is where cost studies help. You do not need to know the absolute cost of the oats in order to get a figure of value to you, but you need to know the relative cost. Barley and spring wheat are the competing crops. Knowing the relative costs and profits of the three crops, the farmer can decide between them and take the one that pays best. That is what the farmer is actually doing.

In a certain region oats pay best; in another region barley, and in still another region wheat. Take it in the region in which I had been farming until I came down here: We have our choice between sugar beets—we have a factory at Madison—tobacco, and corn, which are competing crops, intertill crops, and require the attention of the farmer at the same time of the year. I was interested in having cost

records on those three crops and I grew all three of those one year in order to get comparative records to see which one paid best. Of course, what you really do is to get at the elements of cost, so that if next year they raise the price of beets from \$6 to \$10, then you can figure, knowing the basic elements of cost, which of those three crops will pay best on the basis of the new price schedule. Of course, the beet price is a known factor; the corn price is an unknown factor, and the tobacco price is an unknown factor. The farmer had to guess on that. Nevertheless, he got the elements of cost, and that is one of the things we are emphasizing in all these cost studies, to know what the different elements of cost are clear through from the time the growing of the crop begins until it ends. We consider those in terms of quantity of seed, fertilizer, labor—men and horses—and equipment, more than in terms of dollars, because that factor changes from time to time.

Another important use, besides the selection of the individual crops, is the choice between methods of producing those crops. For instance, the kind of farm power you are going to use, and getting at the relative cost of doing the work on the farm by the different methods is a thing we believe will be very helpful. In order to show the way in which a detailed cost figure is helpful on this, I have brought down these little excerpts from the Yearbook containing these charts, showing just the time of year horse labor is expended upon the different kinds of work on the farm. The top row in this table shows the total horse labor and then the different kinds of horse labor on the farm or on the roads, etc. Then applying it to the different kinds of work, it shows the percentage of the total horse work used for disking, plowing, and harrowing. Our theory was if we knew the time of year the work was done and the kind of work it is, from that chart we can pretty nearly pick out the things that can be done by the tractor and the things that can not well be done by the tractor, and we can say whether that is in the spring, when the ground is likely to be moist or whether it is the extra heavy work in the fall when the ground is dryer.

On the basis of an analysis of this kind, we can move on to the next question of whether or not this work that can be done either by horse or tractor can be done more cheaply by the one than by the other. Of course, there again we do not want our results simply in terms of dollars and cents but in terms of the elements of cost—the feed consumed and the element of depreciation for the horses, and the fuel, oil, repairs, and depreciation for the tractor.

Mr. ANDERSON. This chart would seem to indicate a strong disadvantage against the tractor, would it not?

Mr. TAYLOR. These are just the facts as we found them and when these studies were made the tractor was not thought of—I mean, when the records were gathered for these studies—they just took the facts as they were. Those are based on tabulated cost studies that were done by the root system in Minnesota and by a similar method in Wisconsin, and a few other States.

Speaking of the disadvantage of the tractor: Having your elements of cost, then if oats go down and hay goes down and horses are cheap, you have your elements to put your prices to as a basis of comparison. The tractor costs three times as much expressed in corn right now, for example, as it did some time last summer.

Mr. WASON. What was your answer to that?

Mr. TAYLOR. The tractor costs have remained up and the horse costs have gone down, making the choice between the two more favorable now to the horse than it was last spring.

Mr. BYRNES. Because it costs more to maintain and operate the tractor than it does the horse?

Mr. TAYLOR. Yes. We might have made a comparison and had it in dollars and cents last spring when corn was high—when oats cost a \$1 a bushel and corn from \$1.50 to \$1.75, when you would have had one result. Now, with corn coming down toward 50 cents a bushel, as far as the farmer is concerned, and oats to a price appreciably below 50 cents on the farm, and hay relatively cheaper than it was, the relative advantage of the horse over the tractor is greater than before, until the cost of the tractor, gasoline, lubricating oil, and repairs come down in like proportion. Last summer, for example, they were offering to sell light tractors for 600 bushels of corn. Now, it would take about 1,800 bushels to buy the same tractor. Now, corn and oats, figured simply as horse feed, show a change and for that reason we want to get all of our figures in terms of those basis elements of cost, rather than simply in dollars and cents.

Our idea has been this also, that when we get these cost figures in for 100 or 200 farms we find a very wide range in the costs. One man's cost for cotton in 1918 was as low as 8 cents a pound and another man's was appreciably over \$1—I think about \$1.07. Looked at from the standpoint of farm organization and having all the elements of cost on each one of those farms, we can take this man who had very high costs and go through the elements of cost from the time he began to prepare the land, putting in the seed, cultivating the crop, picking and ginning, and, in comparison with the man who had very low costs, find out why it is this one man had high costs and the other low costs. That is the starting point for trying to find out how these men with high costs can reduce their costs and increase their profits.

It is true that in any given year there are incidental elements of cost that come in that make the range a little wider than it would be on the average. There are men who are just learning the business in whatever line of production it is who make a good many mistakes, and by finding out how the other people do this work and keep their costs down it is the starting point for an educational campaign in better farm organization. And having a complete farm analysis record of each one of these farms where we get the costs we have the starting point for the farm organization work which is carried forward through the farm-management demonstrators and county agents. The farm-management demonstrators are the connection between our office and the extension work.

From the standpoint of knowing the costs in general and the relation between the costs of one region and another region, we have something worth while. If, in a given region, agriculture is depressed and the farmers are continually doing very badly in their farming and in some other region they are continually doing very well, there is something to explain. And by having the elements in one region and in the other, we have the starting point for finding

out whether one region is able to compete or should be able to compete with another region.

Taking up this matter more or less historically, for example, there was a time when cotton production in Georgia was very much depressed because of the fact of the rapid increase in cotton production in the Yazoo Delta and over in the black prairie of Texas, where the costs were very much lower than they were in the older region. They did not have to use any fertilizer, for one reason, and another reason is the different class of people carrying on the production. Especially is that true in the black prairie region of Texas. That was the starting point, then, in the extension service for making some suggestions to the people in the older region, who were continuing to farm in accordance with the methods of earlier days, before this competition came in, as to how to reorganize their farming so as to improve the situation.

With regard to the question of the relation of costs to prices (a subject that has attracted a good deal of attention in a popular way), the first and important relation between costs and prices, as I see it, is this: If, as is usually assumed, the price is the result of supply and demand, it is through affecting the supply that cost affects the price. Higher costs tend to keep the supply down and lower costs tend to stimulate supply, in case the people who are producing know their costs. But in case those who are carrying on the production do not know their costs it is entirely possible they may go ahead producing without regard to costs, and increase the supply at a time when they are doing it very much to their own detriment. In other lines of production, the producers know their costs, and, knowing their costs, are inclined, as individuals, to slow up on the lines where the margin of profit is small and to increase on the lines where the margin of profit is greater. This increases their profit and, at the same time, gives the public the things they have a keener desire for, so that from both points of view it would seem to be desirable.

From the standpoint of price regulation, I want to say frankly I feel that during the period of the war, when price regulation seemed to be important and in the foreground, the tendency was to lose sight of the more important reason for cost study and to give too much emphasis to cost studies as a basis for price fixing. I suppose we would agree in the long run, and wholly aside from war times there is not likely to be much price fixing; yet it may be true, under peculiar circumstances, that there may be some price fixing in the future. For instance, the milk supply that comes to the city of Chicago; assuming that the distributors of milk are operating together practically as a monopoly and are setting the price they will pay for milk from time to time, so long as this is a fair and adequate price, there is nothing to be said. It might be possible, however, for them to decide upon a price which would not, in the long run, be adequate and yet which would bring an adequate supply, temporarily. For instance, the farmers have herds; they have gone to the expense of building barns and making them conform to the rules that they must live up to if they sell milk on the Chicago market, so that they have their investments there in their dairy business and in their buildings and cows, and the question is what

are they going to do if they do not produce milk. And it would take. I should say, two or three years of production at a price too low (it might be true, at least, at a given time) before the supply would commence to drop down below what could be sold at the particular prices the city dealers were asking.

The quality would fall quicker than the quantity would fall. So that from both the standpoint of the quality of the milk and the quantity of it there would be a gradual decline in the industry if the price were not high enough; yet the farmers, acting as individuals, would have no recourse. The ultimate effect would be the gradual destroying of the dairy industry in that general territory. Then, as the supply commenced to fall down, it would be necessary to get stimulating prices. And, taking it through a period of six years, for instance, the people in the city might pay more for their milk, on the average, because of the fact the farmers were not getting enough during the early part of the period. Under conditions of that kind, where large numbers of individual farmers are selling to what is essentially a monopoly, it may be necessary and desirable, from the standpoint of the public, to have some kind of a milk commission that will figure a fair price that will support the dairy industry and keep a supply of sanitary milk coming in continually, in which case cost figures would be essential if this milk commission were going to do work of this kind. Of course, they did this work during the war; but whether or not that will be demanded in the future, I do not know. But during the war too many people came to look upon cost studies as valuable primarily as a basis of price fixing. I look upon cost studies primarily from the standpoint of economy in the organization and operation of the farm and as a basis for the teaching of the subject of farm management in the different parts of the country. They are of value not simply to the individual farms, but of value from the standpoint of comparison for educational purposes, comparing the costs of one region with the costs of another region.

Those are just a few of the things that come to my mind now. If you have any questions, I will be only too glad to give my attention to the things in your own minds.

Mr. ANDERSON. I do not claim any special knowledge about this cost proposition, but it has struck me, to be of much value, that the proposition has got to be directed to the farm plant as a unit, to an analysis of operations as much as an analysis of costs. Costs, after all, is not a mere matter of statistics; it is a matter of the analysis of the operations that go into the making of those costs. And what I am not yet satisfied about is how you get back to these farms with an analysis of operations or a plan which enables the farmer himself to analyze his operations so that he can correct his organization and his method of farm management in accordance with what an analysis of his operations shows to be the facts that exist in it. I recognize, of course, that in these farm studies you are in a somewhat different position than would be the case in relation to the industry costs; because there, over a long period of years, you have established certain definite fundamental facts which enable you to analyze costs of operation in relation to those facts. That fundamental basis probably has not been established with reference to agriculture and you have to

establish it before you get very far with an analysis of what operation pays best on the farm as a unit. And I would like to have you discuss for me, if you will, how you get back to the analysis of the farm operation and the correction of the defects of that organization.

Mr. TAYLOR. There are two parts to my answer to that question. First, we go back to the individual farmer from whom we got the record and show him the analysis of his costs of all of his different operations, and then if his costs in any particular respect are high, even though his total cost may be relatively low, we point out how he has extra high costs and show him what other men (taking the ten best in a hundred, for instance) have done in the way of keeping their costs down. Then we call his attention to the fact that all of his field work, all of his plowing, harrowing, and all kinds of horse labor has cost him very much more than it has cost lots of these other men; we call his attention to the fact that in proportion to the amount of horse labor performed he has kept more horses, fed more horses through the year, and in many cases we have shown the farmer how he can do the same work and do it with four horses instead of six. It would not cut down the total cost in exactly the same proportion, but it would very materially reduce the total cost of performing that work.

Likewise, from the standpoint of the complete utilization of the farmer's own time, on some farms the total labor charge against a particular crop, like wheat, cotton, or corn, may run very high because he does not have other things to do at other seasons, to supplement, so as to make a more complete utilization of his man labor and likewise of his horse labor. So that is the reason we insist, in the case of every record, on not only having returns show exactly the facts in the case of his wheat crop but on knowing what else is going on on that farm. Because if wheat costs are very high, it may be because the entire labor charge for horses and machinery, used for various purposes, and of himself, all has to go against that one crop.

Mr. ANDERSON. That is to say, you do not undertake to eliminate, in your determination of costs, as you go along, the cost of raising wheat; that is, you do not undertake to allocate immediately the cost of raising wheat, but you take the entire farm operation—

Mr. TAYLOR. Yes.

Mr. ANDERSON. And then analyze out of that the cost of raising a single product. Am I right about that?

Mr. TAYLOR. Yes. In many cases we will find the costs are very high because there is not much else but one crop and so much man time and equipment time and everything has to be allocated to one crop; whereas, if the farm were properly organized that would not have to be done. Not only do we send back to every man from whom we get a record the discussion of his own problem, but this material becomes the basis of the extension work in that region. Our contact there is through the farm management demonstrators. We recognize in all this cost work one of the real difficulties is to get as accurate statements as we need; so that at the same time this research work is going on, through the farm management demonstrators and county agents, the farmers are being urged to keep more accurate records themselves, and the whole emphasis of the farm management

demonstration work has been on that one thing. You see, the more completely the farmers keep records for themselves and then accurately learn to analyze those records, the more we can get them to do that work themselves the more accurate will be the figures and the more effective they will be in influencing farm management. But it takes time. It is my opinion that in time the leading farmers, the bell wethers, as it were, in the different communities, will be keeping records and analyzing them in accordance with the methods being worked out in the department and the agricultural experiment stations, and then these men should be in a position to act intelligently with regard to what they are going to produce and the methods they will use in production, and while we can not expect that 50 per cent or even 40 per cent of the farmers are going to keep good records and be able to act on the basis of their own results, if the leading men of the community have this conscious basis of action the others tend to follow. So that I feel, both through sending the results back to the individual farmer and through the extension service stimulating the others, the results will get back to the farmers and result in a more economical organization of the farm which, as I say, is the goal.

Mr. ANDERSON. Do I understand you mean by that, where you have established in a community a farmer or two farmers who keep cost records and, by means of those cost records, have standardized their operations, that that standard of operations will tend to become the standard of operations for the same class of industry, the same class of farming, in that region?

Mr. TAYLOR. Yes. And the way that is gradually being brought to pass can be illustrated by some of the work done by the farm management demonstrators in Illinois this last season. As a result of keeping records, they picked out farmers, one farmer especially good on one particular phase of his farming—let us say, corn—while he did other things reasonably well, he did unusually well in cutting down his costs per unit of product on corn. On another farm it was the way in which he handled his live stock, for instance. As a result, in a given county, the demonstrator, working with the county agent, found not one model farm about which he could say, "Now, go on and look at John Smith's farm and you can see how to do it," but they found on five or six farms the elements of the model farm they would like to see.

And so they organized a tour and had a large number of farmers of the community go around and visit four or five farms, and the records of those farms were put up, and the farmer himself was asked to tell about those records to the other farmers. Instead of the county agent or the farm management demonstrator doing it, they asked the farmer to do it, and created a good deal of interest; and from the five or six farms they visited they got a good point from each one, which they took home with them. And it was emphasized that every farmer must do some thinking for himself and learn to put those elements together into more profitable farming by working on his own specific conditions.

Mr. ANDERSON. In what States is this beef-production work being carried on?

Mr. TAYLOR. The beef-production cost studies are being carried on in Indiana, Illinois, Iowa, Nebraska, and Missouri.

Mr. ANDERSON. You have under observation in those States how many farmers?

Mr. TAYLOR. We have under detailed observation 25 farms in each State, and these 25 are out of a hundred in each State that are surveyed each year, so that we get a setting of the larger community.

Mr. ANDERSON. You carry on cotton studies; where are those carried on?

Mr. TAYLOR. The cotton studies are carried on in 10 different regions, commencing with South Carolina. There are two regions in South Carolina, three in Georgia, two in Alabama, two in Mississippi, two in Texas. How many does that make?

Mr. ANDERSON. That makes 11.

Mr. TAYLOR. There were 10 the first year, and this last year there was another one taken on in Arkansas. This map shows the location of all of the different cost and farm organization studies. Where there are two side by side, it means the studies have been made there for two years in succession. There have been two for two years in succession in South Carolina, three for two years in succession in Georgia, two for two years in succession in Alabama, and then another one in northern Alabama. Evidently there is only one in Mississippi. Then, for the beef cattle studies (these are the special cost-of-production studies), there is one in Indiana, Illinois, Missouri, Iowa, and Kansas. This map shows the specific locations of those.

Mr. WASON. You say here cost of production roots?

Mr. TAYLOR. Yes; those are by the root method. Then, the tractor studies. These squares show where the tractor studies are being made in Pennsylvania and Ohio.

Mr. ANDERSON. You have here "general cost of production roots." What does that mean?

Mr. TAYLOR. That means where we are getting the entire costs, the entire record of the farmer as a whole, just as was true in the Minnesota studies carried on for many years, where a man visited the farmer each day and got detailed records from the farm or where a farmer was found who was willing to make out daily labor sheets of both men and horse labor and send them in at the week ends. It has been found a great many farmers will do that, but that means where the entire details of labor records—man and horse labor records—of every enterprise on the farm are being kept. In these beef studies we do not get the detailed records from day to day of anything but the beef cost business, but we have a general statement of the entire farm business. It is the only enterprise that is being followed up in great detail on these farms. The studies, such as this horse labor bulletin, were based upon the detailed records where everything for the whole farm was taken.

Mr. ANDERSON. Where you carry on these beef-production studies, you are attempting to allocate the particular portion of the labor and horse hour costs to the beef-production proposition as you go along?

Mr. TAYLOR. Yes; not as we go along, but in the end we do. We find out how much is going on that. We do not know the total cost, we allocate in terms of hours as we go along, but do not allocate any costs until we know what else that labor is used for and what particular portion of it goes on this enterprise.

Mr. ANDERSON. What I can not understand is how you get that information and how you allocate it unless you have complete costs for the whole farm operation.

Mr. TAYLOR. We can not allocate it as exactly without the complete farm record as we can with the complete farm record, but we can get fairly accurate general statements by the survey method as to what the other enterprises are and that is made easier and more accurate by the fact we have 150 of those detailed farm studies going on parallel, so that it puts us in a stronger position for allocating it. There is a great deal of estimate, however—there must be a great deal of estimate—in any allocation of this kind unless you have every element kept. Whereas on the 150 farms we are keeping the detailed records, where every element is kept as a basis of allocation. On the beef studies they are not kept from day to day in the same careful way but are carefully estimated by the farmer.

Mr. ANDERSON. Have you a statement there showing where the wheat studies are being carried on?

Mr. TAYLOR. They commence over in the edge of Oklahoma and there are a considerable number of areas in Kansas and some in Missouri, making up the winter wheat region, and then in Minnesota and the Dakotas for the spring wheat region.

Mr. ANDERSON. How extensive is this cost of fruit proposition?

Mr. TAYLOR. At the present time we are doing practically nothing on the cost of fruit.

Mr. BYRNES. Let me ask you about your cotton studies, because I am familiar with that and may be able to understand your proceeding. You make an effort to secure the detailed costs at a given farm by sending a man to that farm?

Mr. TAYLOR. We send a man once for all to the cotton farm. He may go twice. But we are not keeping detailed records on those cotton farms from day to day. With the funds available that is entirely out of the question; but on about 800 farms in these 10 regions, the first year, and I think about 12 regions the second year, we sit down with the farmer and go through the schedule and ask him the whole series of questions regarding his elements of cost. We know from the general survey how many horses he keeps, how much labor he has; we know how much fertilizer he has purchased, and we know his expenses for picking and sacks and we go through all these details. The cotton-cost bulletin I have here recites those and, in the first place, is the map showing the regions that were taken the first year. This is by the survey method.

Mr. BYRNES. When he gets that information—how many horses and how many laborers he has, how much fertilizer he has bought—then you must ascertain how much of his farm he has planted in cotton and how much in corn.

Mr. TAYLOR. Yes.

Mr. BYRNES. Because every farmer has some other crop—he has some corn planted. Do you go into that, too?

Mr. TAYLOR. Yes.

Mr. BYRNES. Then how do you allocate the cost to the corn and to the other crop?

Mr. TAYLOR. We distribute the labor of the horses and the men on the different enterprises.

Mr. BYRNES. How do you do that—by merely estimating the number of hours spent on the other crop?

Mr. TAYLOR. Yes; by the survey method. The farmer makes these estimates himself. All this is done right with the farmer; he is asked, how much corn did you have in, how did you prepare the land for that, how long did it take you to prepare the land, how many horses worked with the men—and in that way we get it as accurately as we can by this survey method.

Mr. BYRNES. How about his garden now? If he has a garden, do you go into that and estimate the time and labor given to that?

Mr. TAYLOR. In case that is done by the regular farm labor; yes. In case it is done by the children and women, that is not done. But in case the women and children work in the field——

Mr. BYRNES. I was going to ask, suppose the women and children work in the field?

Mr. TAYLOR. Then the record is kept of the women and child labor?

Mr. BYRNES. And you ask the farmer then to estimate how much time his children have spent on work in the field?

Mr. TAYLOR. Yes.

Mr. BYRNES. And the accuracy of the survey depends on his accuracy in making that guess?

Mr. TAYLOR. Yes. Where the children's work is confined very largely to chopping and picking, you will find the accuracy on these two points is likely to be fairly close, but not as accurate as if you get them by the root system. The only way to get a perfect farm cost account is by the root system.

Mr. BYRNES. Of course the cost of production will depend upon the yield that year.

Mr. TAYLOR. The cost of production of any given year will be affected very largely by the yield. One wants to be careful, however, in drawing conclusions from that. That does not mean that the higher your yield the lower your costs, necessarily, because you might get a high yield by too great cost. But with the known costs—take the customary method of producing cotton on a given farm—some years the yield will be high and some years low, due to natural conditions. The years when natural conditions are favorable, costs will be low, and in the years when natural conditions are not favorable, costs will be high, and you have that element of variation. That is one reason why the range in cotton costs is as great as it is.

Mr. BYRNES. You take this, too, into consideration, that the costs will differ upon a large farm and on a small farm?

Mr. TAYLOR. They are very likely to.

Mr. BYRNES. Because the man who farms on a large scale and purchases on a large scale can make his purchases cheaper than the man who farms on a small scale, especially when that small man often times is buying from the merchant who has a lien on his crop and is exacting exorbitant prices from him for his stuff. Is not that true?

Mr. TAYLOR. That would be one element, and in that regard the small farmer is at a disadvantage. In other regards the small farmer is at an advantage, because he uses his own labor, and if he is really interested in his work he may do more in a given number of hours than the hired laborer.

Mr. BYRNES. What I am driving at is this: If you take a survey of only a certain class of farms, you will never arrive at a fair average cost of production.

Mr. TAYLOR. I want to say this, that in these cotton records I should have made it clear that we go to a plantation, let us say, where there may be 30 tenants operating on the land owned by one man. Now, we depend very largely on this owner, who may be furnishing all of the machinery and all of the horses and all the mules for all these tenants, for the record of this whole group, yet we get the separate record for each of these tenants. I know we get a plenty of them that have costs too high, at any rate.

Mr. BYRNES. You estimate the value of the man's capital invested in the farm?

Mr. TAYLOR. Yes.

Mr. BYRNES. And in the case of rent, how much rent he is paying?

Mr. TAYLOR. Yes; we have the rent element. In case he owns the land, we get a conservative estimate of the value of the land that is used.

Mr. BYRNES. A survey of that character, to be of real value, should be conducted for more than one year upon the same farm?

Mr. TAYLOR. Yes. So far as possible we try to cover essentially the same cotton farms for two years in succession, but not completely, because we took more the second time; we took two new regions.

WHEAT.

Mr. ANDERSON. Will you give us in a general way, Dr. Taylor, the results of your studies on the cost of production of wheat?

Dr. TAYLOR. In a general way, the cost of producing wheat showed a range from about \$1 a bushel up to about \$5 a bushel on the different farms in Kansas. The wide range of that particular year, 1919, was due more largely than any other one thing to the fact that a considerable part of the area planted was not harvested, it being a bad year. And we included, of course, all the outlay of that farmer for wheat in his total costs and distributed that against the wheat that he actually thrashed. Aside from that factor, however, there would be a very considerable range in the element of costs. These wheat costs were gotten the same as the cotton costs—by the survey method; that is, our scientific men, who are experienced in taking these records, went to the farmers and spent a few hours with each farmer getting his answers to the questions. It requires men with a considerable degree of skill to do this. We have tried men who would be turned down by every other farmer, and we have men now in our organization who can get practically every farmer they go to because they meet the farmer in the right way and know how to draw him out. Knowing how to ask a question is a big thing in the survey method—knowing how to unravel what is in the farmer's mind.

The farmer might commence by saying: "Really, I do not know anything about this"; but if you just commence to ask him one thing at a time, you can unravel what is in his mind and get much more than you might suppose.

Mr. ANDERSON. This survey method, then, is simply going to the farmer and getting whatever information the farmer has?

Mr. TAYLOR. Yes; and when you get it in the detail, such as this: How many acres of wheat did you have? How many acres of other

crops did you have? And, then, taking the wheat, how much time was required to do the plowing, say, it is in Kansas, he may have used his lister for a period when the ground was moist, then he used his disk plow later, then his middle buster where he has used his lister. Then, the next thing is, these farmers know practically the days' work they put on a certain crop and, of course, they know how many horses they were driving, and you can get a very close figure on the labor for preparing that land and preparing the seed bed. And when it comes to hitching on drills and putting it in, they have very accurate information as to the amount of seed they have used and the amount of time they put in in seeding. It is a thing that impresses itself on their minds—those are outstanding things. And when it comes to thrashing, that is relatively simple in these regions, because they pay so much a bushel for the whole job.

Mr. RUBEN. Do these farmers know their respective farms have been selected upon which to make an estimate, prior to putting in the crop and so on? The reason I ask that question is this, because if the farmer knows for what purpose his farm is going to be used, he will keep track of what he is doing; but if you go in there, after he has been working his farm for a number of months, and ask "How much time did you put in on this field, how much on corn," and all that sort of thing, he will simply have to make his replies from memory and the statistics you get will be much more inaccurate.

Mr. TAYLOR. The only thing we can do in the way of preparation the first year is to have the area selected and have the county agent notified and let the county agent give them a general statement that the work is going to be done. The second year, however, to the extent that we visit these same men, they know what to expect and be prepared for. Man after man has said, "Now, if you come next year, I can give it to you correctly."

Mr. ANDERSON. Do you furnish those men with any sort of blanks or any sort of record to keep?

Mr. TAYLOR. We try to get a record book in the hand of each of those men, after the first time, to keep the outstanding items. Of course, it is not all of them that will do it, by any means, but as we can get more and more people to keep record books, we will gradually pass from the survey method to the complete-record method. Personally, it is not so long since I questioned whether or not we should attempt to use the survey method; but, after all, I find a survey record stimulates the man to the point where he will keep a record by seeing the kind of results that could be gotten from a record. And it is furthermore true that skilled men in taking these records can get a degree of accuracy far above any accuracy you get in the census statistics, for example. And I feel that as a pioneer method of cost studies, the survey method is justified; at the same time, wherever the problem is very complex as you find it anywhere in the corn belt, we have not undertaken to get costs by the survey method. But where the principal income is from one source we feel we can, by getting total expenditures and total receipts, get a high degree of accuracy by the survey method. Where it is so complex as it is on the corn-belt farm or on the dairy farm, we felt we should adopt the root method in order to get more accurate results.

Mr. ANDERSON. How do you propose to expand this work; by taking on more kinds of crops, or how?

BEEF.

Mr. TAYLOR. Let us take the beef. We have caught beef only at one stage.

Mr. ANDERSON. What do you mean by that?

Mr. TAYLOR. At the present time we are simply keeping costs of fattening beef cattle; but we must know much more about beef than that. We need to go back to the production of steers on the range and make a study of that system and the costs so as to carry the cattle through the different stages.

Our idea when we started this study of these 25 farms in each of these five States was that this was not enough; that we expected to have the funds with which to expand this to 75 farms in each of those States or, in the case of some of the States that were not so important in beef production, perhaps 50 instead of 25, and then put in cost studies in other States. For instance, we would like very much to have beef-cost studies in the eastern part of West Virginia. There is quite a stretch across there that is very important, and it represents different conditions than we have out in the corn belt. We have confined ourselves in these first studies to the corn belt, because we felt 5 times 25, or 125 careful records and four times as many counting the surveys, would be more useful as representing just the corn-belt conditions than if we tried to get it under other conditions.

Mr. ANDERSON. How much money do you propose to spend next year on this beef production, can you say?

Mr. TAYLOR. It will take about \$60,000, I should say, to extend the beef cattle production to what it should be.

Mr. ANDERSON. What are you spending now?

Mr. TAYLOR. We are spending approximately \$20,000 at the present time. Take the cost study of cotton and wheat. It is believed that by proceeding year after year, getting these basic elements of cost and working them out with great care, that after we have had three years for cotton, for example, it will be possible to get at fairly accurate estimates of the cost of producing cotton in a given year by setting certain percentage returns through the bureau of crop estimates on the changes that have taken place in the elements of cost; that is, what change has taken place in the cost of fertilizer, what change has taken place in the cost of labor, and of feed for mules, etc., then knowing our elements of cost and knowing the changes that have taken place in the elements of cost, and knowing the yield, we believe it to be possible to get out a statement of the cost; that is, a general statement of the range of costs practically soon as the total yield is known, about in the same way that the bureau of Crop Estimates gets out figures on the total production.

Mr. BYRNES. How long a time will elapse after you have made these studies before you will communicate to the farmers the results of your investigation?

COTTON.

Mr. TAYLOR. Take the cotton studies. That is the first study that I made after I took charge of the office. It is about six weeks, I would say, after the survey is completed; that is, when the men come

in from the field, or start on some place and these records come the office, then the returns of the results to the individual farmer could commence. How long this would take in a given case depends on the number of records and the number of clerks.

Take our rice records at the present time. We felt that we did not have the funds to make a rice-cost survey this year; practically all the funds had been accounted for one or another, and yet there was much interest in having these rice studies made that we asked some men who were working primarily on extension work at other times should go and get these 250 records. Out of an emergency fund in the office we set aside about \$2,500 to pay the expenses of getting these records, and the records are in. When they will be tabulated and when the results go back to these individual farmers, as I understand it, is your question?

Mr. BYRNES. Yes. To give you an idea, this cotton bulletin you have here, which contains 814 records for 1918, was published November 19, 1920; that is two years later.

Mr. TAYLOR. The mimeographed result of that was sent back to these farmers, a complete statement for all was sent back to these farmers a year earlier than that.

Mr. BYRNES. Which would be a year after it was taken, because it says studies for 1918, and they were computed in the fall of 1918.

Mr. TAYLOR. They were taken in the spring of 1919. It was in the spring of 1919 that I took charge of the office.

Mr. BYRNES. How does it represent the cost for 1918?

Mr. TAYLOR. In the spring of 1919 they got the record for the previous year.

Mr. BYRNES. You do not think the average farmer down there, if you collect the information as you have described, has any recollection in 1919 of how much he spent in the spring of 1918 for chopping up cotton?

Mr. TAYLOR. Yes; we think he does.

Mr. BYRNES. Is that the information upon which it is based, that you ask him to recall how much time his children spend in chopping up cotton the previous year?

Mr. TAYLOR. Yes.

Mr. BYRNES. I am frank to say that you have made me lose confidence in your cost production studies.

Mr. TAYLOR. You are not the only one who, at first blush, on a question of that kind would think that your view was correct. I was of that view at one time, but when I see the skill with which the men ask questions—

Mr. BYRNES. It is not the skill with which a question is asked, but it is the skill with which the question is answered that gets me.

Mr. TAYLOR. That is also true; but you must bear in mind that these farmers are going ahead very much the same year after year.

Mr. BYRNES. I can not agree with that at all. Take 1918. You took an extraordinary year. If a man had a son or two, the chances are that they were in the Army, and this year they are back. They may be farming for themselves, or they may be around the house working. In 1919, if you ask your intelligent, educated farmer, who has kept some kind of an account, he may be able to recall, but I can not see any hope of your going back there a year afterwards and getting much of an estimate from the uneducated farmer.

Mr. TAYLOR. The men will start in this year in January, asking questions regarding the year that is just completed. It is not as satisfactory as if we had the funds with which to use a route system and have these people visited from time to time. What I am hoping is that we may have the funds with which not to greatly expand the number of farmers we keep records on, but to greatly improve the quality of the records by using the methods we have used in the case of tobacco in Kentucky, for instance. We found that one young man with a Ford could keep in touch with 75 farmers right through the summer, and visit every one of those once a week, and we have very much more confidence ourselves in those records than we do in these others.

Mr. BYRNES. I can see your position here, as long as you have to make simply a survey, that you could not make it in the middle of the year, because the cost of production has not been completed, and you had to wait until the end of the year. But still it does not cause me to have as much confidence in your guess as if it had been taken during the season.

Mr. TAYLOR. The wheat studies have been taken this fall for 1920. We have this advantage. As soon as the wheat harvest is over we can start in Oklahoma and work north, following the harvest, and we get the record just following the year's work.

Mr. RUBEY. Well, you can not give the results of your studies to the farmer in time to assist him in next year's crop, because he must begin to plow for wheat in the fall.

Mr. TAYLOR. That is absolutely true, not in time for next year's crop.

Mr. ANDERSON. Can you give the committee a statement showing the amount of money that you have used on the beef production work this year, and how much you expect to use next year, and so on down the line, with wheat and cotton? If you have not got it now you can furnish a statement later.

Mr. TAYLOR. I would prefer giving an absolutely detailed and accurate statement later.

Mr. RUBEY. In connection with that can you give the number of crops on which you are making studies?

Mr. TAYLOR. I can give that pretty closely right now, but if you would just as soon have it in connection with the other data. I will put it in later.

Mr. RUBEY. That will be all right.

Estimate of expenditures for the section for cost of production studies for fiscal years ending June, 1921, and June, 1922.

Mr. TAYLOR. I might call attention to the fact that cost of production is only one of the seven lines of work we have here before us.

Mr. ANDERSON. All right, let us take up these increases which you are proposing in your other lines of work.

FARM ORGANIZATION STUDIES.

Mr. TAYLOR. Farm organization and cost of production, of course, are so close together that what I have said applies to both of those practically, so I will pass on to farm finance. Up to the present time I will say that work on farm finance is work that had been carried in the Bureau of Markets prior to the time that I took charge of the Office of Farm Management, and was transferred at that time. Mr. Valgren was transferred from the Bureau of Markets to the Office of Farm Management at the time the work was transferred, and the subjects of cooperative farm insurance, insurance of buildings, hail insurance, and subjects of that kind were the ones he had been working on, and that is the phase of this subject of farm finance that is best developed.

This year we are spending a little more than the year before. This year we have a little less than \$14,000, \$13,850, allotted to farm finance, and we have taken up the question of personal credit, and are making a special study of the personal credit needs of the farmers, and that means that an additional scientific man was put in with Valgren, who is devoting his time to that subject.

FARM FINANCE STUDIES.

Mr. ANDERSON. What were you doing on this farm insurance business?

Mr. TAYLOR. Studying out the different methods that are used by insurance companies, stimulating the mutual insurance companies to use better methods of accounts and make better calculations so that the amount they charge for their insurance will be more nearly what it should be, and finding the cost of cooperative insurance in comparison with insurance carried on by other methods. Here are some of the bulletins that Mr. Valgren has gotten out to be helpful along that line.

A system of records for local farmers and mutual life insurance companies has been worked out, and a number of stationers have printed these and have them on sale for the mutual insurance companies. They can get them so much more cheaply by this wholesale method.

Mr. Valgren has attended the conventions in various States of these people who are carrying on these mutual insurance companies, and spoken to them and tried to help them get their work on a better basis, and the letters we received from those in charge of these meetings indicate that he has been very helpful to them.

Here is a bulletin on hail insurance on farm crops in the United States. That represents the product that Mr. Valgren has turned out since he came with us. No product is yet available on the subject of personal credit. Personal credit is being studied, both from the standpoint of credit needs in different parts of the country and

different types of farming, and also from the standpoint of different methods of providing that credit and the cost of getting that credit by the different methods.

The question of agricultural taxation and the effect of different methods of taxation upon the farm is a subject that would naturally fall under farm finance, but on it nothing has been done up to this time.

FARM LABOR STUDIES.

Then, following farm finance is farm labor. At the present time we are spending \$5,000 only on that subject.

Mr. ANDERSON. What is the character of the work you are doing on personal credits, and what is the object of it? Does it have some relation to legislation, or what?

Mr. TAYLOR. I suppose there are two things to look toward. One is legislation that will provide for a proper system of personal credit, and the other is greater intelligence on the part of the farmers, which will finally result as the educational extension work in giving them a better knowledge in regard to how to get better credit facilities. There is a relation between the farm accounting work and better credit. For instance, the farmer who has farm records and farm accounts knows what he, as an individual, is worth, knows his net worth at the end of the year, and if he has a record of his receipts and expenditures, his total assets and his liabilities, he is in a very much stronger position to make an impression upon the banker than the man who has not that record.

Mr. RUBEY. If the banker takes the proper precautions, will he not instill that idea into the farmer, because the banker will naturally get a record of what the man has, what he is doing, etc.?

Mr. TAYLOR. There is a little cooperative credit being carried on in the United States at the present time. North Carolina has a little, and there are laws in several States. There is a little cooperative credit in Texas. But the purpose of this study is, as I say, first to get at the credit needs. The length of time for which the farmers need to borrow money, for example, may be very different from the length of time that a merchant needs to borrow money, and as our banking system is organized more largely for supply merchants than farmers it is very natural that it may not fit perfectly—

Mr. RUBEY. This is an important work and I am glad you are doing it. I want to ask this question: Is there any other department of the Government that is doing any work of this kind?

Mr. TAYLOR. No; I think not. In the Department of Agriculture this is the only section doing it, and the question arose two years ago as to whether or not this study should not be made by the Federal Farm Loan Board, and last year, before coming to the hearing, the Secretary of Agriculture wrote to the governor of the Farm Loan Board and asked him whether or not they wanted to carry on investigations on this subject, or would prefer to have the Department of Agriculture carry these studies on, and he wrote back that the Federal Farm Loan Board very much preferred that the Department of Agriculture should make these studies, as they were not equipped for doing that investigational work, so that matter was cleared up at that time I think.

Mr. ANDERSON. What do you do under taxation?

Mr. TAYLOR. As I say, we have done nothing on the question of taxation. That is one of the questions, however, that I wish had one of the strongest men in the country studying at the present time, because in the readjustment of taxes at the present time other interests are giving it plenty of attention for their own sake, and if everything is done with a view to easing their situation, and nothing to ease the situation of the farmer, the probabilities are that when the adjustment is made the farmer will have more rather than less of the load, but with the small funds available and the men that were available when I took charge we have merely proceeded on the things we could do. Fortunately, the Farm Bureau has a man devoting his entire time to that subject.

If there are no more questions on the subject of farm finance we will take up the question of farm labor. That is a subject for which we had no funds the first year I was in charge, and we had hoped to start this work for this year with at least \$25,000, but the appropriations would not admit of it, and so we have made a small beginning by setting aside \$5,000 to make a study entirely in the wheat belt from Oklahoma north to the Dakotas and Minnesota, and because we could not hire a good man for full time and the agents in the field with that money we have employed a man part time, Dr. Lescohier, superintendent of the public employment office in Minnesota, who has been considerably in touch with this problem. He is now professor in the University of Wisconsin. He was employed during the summer months, and then for part time since then in preparing his report, and three men in all were hired to work with him in gathering information through the harvest season.

They tried to get information as to where these men came from, and they found that they came largely from the States on either side, and that the agitation for getting laborers from these Eastern States to go to the wheat fields was not very effective, and a mistake usually when anybody responded to it, because of the great expense of getting there and getting back. They found that one of the difficulties is the lack of continuous employment after the men get out there, and they are studying the life history of the men who come into this region during harvest, getting a notion of the kind of men who come. The considerable percentage of them are farmers who come from the neighboring States and go right back to their farms when they get through. A certain number are city men with regular occupations in the city that they go back to, and then there is a very large percentage of hoboes, and in the northern part of the area they ran into a great deal of I. W. W. agitation that was penetrating right through the whole labor force. They also found that the break in the demand for labor in the Dakotas and in Kansas was long enough so that a good deal of this labor became diffused, so that they have a new job of getting labor in for the northern region.

This is being studied both from the standpoint of the farmer who wants a supply of labor and the standpoint of the welfare and success of the men who go into it for the summer. This is a very small segment of the whole farm-labor problem, because when you simply take itinerant labor you have the itinerant labor problem in other regions. For instance, in the trucking regions, in cutting asparagus on the

Eastern Shore for a short period during the asparagus season, there is a whole group that comes in. It involves not only the farmer's problem, but the problem of the conditions under which this labor can be gotten, and the conditions under which they can live, and whether it has any outlook for itself in future years.

Then there is also the farm labor problem, and the ordinary farm monthly hand proposition. We have not been able to touch that, but with the increase of \$20,000 we expect that we will be able to hire Dr. Lescobier or some other man equally as good, we believe, to take charge and devote his entire time to studying the farm labor problem, first the itinerant labor, and then the regular monthly hand.

Are there any questions on that phase of the work?

Mr. ANDERSON. No; proceed.

AGRICULTURAL HISTORY AND GEOGRAPHY.

Mr. TAYLOR. Then the section on agricultural history and geography is one of the old sections of the office and the section that got out the geography of the world's agriculture at the beginning of the war, and it is studying farm economy from the historical and geographical points of view—that is, a comparative study of the different types of farming with regard to what is produced, and also the types of farming from the standpoint of methods of production.

We have a good illustration of that in the last Yearbook showing the methods used in harvesting grain in different regions. While there are certain regions in the West where the combine is the normal standard method of cutting and threshing grain, there are other regions in the United States where the cradle is still the standard method of cutting grain. That is especially true in the eastern mountains, and it helps in the correlation of the various facts we have in farm organization. For instance, commencing on about page 137 we find regions where cutting with the binder is the common method of cutting grain.

Mr. BYRNES. Of what practical value is that information going to be to the farmer?

Mr. TAYLOR. I will answer that question in just a minute. Then, on the next page, you see a region where the header is used, and on the next where the combine is being used. The people who manufacture combines are trying to sell them wherever they can. These students of geography work out what the conditions are that make it of practical use. In these regions of the Northwest, for instance, where the combine is used, they find that they are regions where there is no rain during the harvest season, and where the wheat will stand for a month after it is dead ripe without any damage. In most of the other regions, where the binder is used, that is not true. The combine is a cheaper method, where it can be used, but it can be used only under certain geographical conditions.

Mr. ANDERSON. Is not that pretty well understood now?

Mr. TAYLOR. As a matter of fact, a very considerable number of combines were taken into Kansas this year, and I think that in particular seasons, where the conditions are just right, they can get away with it; but if the season turns out to be like some we have had recently, where there is more rain, it can not be used successfully at

all. At any rate, they are working out scientifically the geographical basis of that particular type of machinery.

Mr. RUBEX. Take the next page there, page 140, where you show an illustration of cutting with the cradle; that shows, from the map that those regions are in mountainous sections?

Mr. TAYLOR. Yes.

Mr. RUBEX. Take that part in the south of Missouri. That is down in the Ozarks where the country is rough and rugged, and they plow out little fields, and they can not use these larger machines to any great extent.

Mr. TAYLOR. In view of the rugged condition or the smallness of the acreage it is very much more economical to cut it with a cradle.

Mr. RUBEX. The same thing is true of eastern Kentucky, West Virginia, and the northwestern part of North Carolina, it being a rough, rugged country.

Mr. TAYLOR. Yes.

Mr. RUBEX. So that I do not see any particular benefit to be gotten from that work. They will eventually adjust themselves to the conditions.

Mr. TAYLOR. Suppose you just take the general proposition that it may seem rather strange to one that we should have regions where the cradle is still used. You have the satisfactory explanation of that in the fact that the cradle is the most economical method of cutting grain under certain conditions, whereas the header is more economical in certain regions, depending upon the climate, the size of the farm, etc. That is simply one small piece of geography work that is worked out.

Mr. HARRISON. What Gov. Rubey means, Dr. Taylor, is that he does not know just what practical value it will be to discover that they are using the cradle in certain sections.

Mr. TAYLOR. So far as these particular farmers are concerned they already know it, and it is not with a view to telling them, but it is with a view to making a comparative study and working out the principles that underlie the selection of different types of machinery.

Mr. RUBEX. You might get some fellow to use it that ought not to be using it. If he finds out that they are using the cradle some where he may get a cradle and go to work with it himself.

Mr. HARRISON. It is really a stock taking of agricultural practices. Many of the census figures have no immediate practical value, but they enable us to check our progress and give us general knowledge of the status of our agriculture and industry.

Mr. RUBEX. The picture on page 144 shows where they are using a cradle, and it looks to me that if they were using a reaper it might be a good idea.

Mr. TAYLOR. That depends. If it is only a 2-acre field they could hardly afford to keep a reaper a year.

Mr. BYRNES. The only reason I see for carrying on this work is that suggested by Mr. Harrison, that you are going to take stock of your agricultural practices, and that is all.

Mr. TAYLOR. I think a comparative study of the types of farming and the methods of doing things will help us work out the principles that underlie the conditions.

Mr. ANDERSON. Take this bulletin you have here: If there is any principle worked out in this bulletin I can not find it, and I have read it to the conclusion. There is a lot of information in it.

Mr. TAYLOR. It is basic material.

Mr. RUBEX. We are going to be hard up for funds, and we ought to spend our money on the things that will bring us the most practical benefit, and where we have to cut we ought to cut on those things that we can best do without and use the funds where they will bring to the farmer the most practical results. Take the preceding item: We are asked for \$25,000 for the study of farm labor. I do not think there is anything that the farmer is interested in more than he is in farm labor, and every help we can give him along that line will be money well spent, whereas these other matters, such as indicated in the next item, do not seem to me to be such as would bring as practical results as those in the preceding item.

Mr. TAYLOR. In comparing and understanding the difference in cost in producing grain in different regions, a knowledge of these different methods can be used to help explain differences in cost. This is both historical and geographical, and while it may not be of immediate value, it is fundamental as a basis for working out the principles of farm organization and readjustment of farming to changing conditions. Take at the present time the problem of readjustment. What can be more useful to us than the history of what happened after the Civil War in this country, and what happened at the close of the Napoleonic wars in the way of readjustment. It was the knowledge of those conditions that made many of the extension people of this country, stimulated by the Bureau of Farm Management, do everything they could to keep people from speculating in land in Iowa. We did everything we could to stem that, and some people thought that it came to a close a good deal earlier because of the agitation against it.

Nevertheless, it went so far that a great deal of damage has been done in the way of pushing up prices of land, and a lot of people bought farms that they were not able to pay for, going into debt and paying more than the land is worth to them to farm this next year on the basis of prewar prices for products, and I am certainly sure that this historical study gives a long time point of view, and it is a basis from which better judgments on a lot of important questions can be made, and is of much greater value from the standpoint of the training of people in the extension and other work, so that they get a broad view, comparatively and historically, of what has happened, so that they are less likely to make mistakes.

Mr. HARRISON. I think the use of this bulletin has given the committee perhaps an erroneous impression regarding the fundamental character of this work.

Mr. RUBEX. How often is this bulletin published?

Mr. TAYLOR. A geography of the world's agriculture was published early in the war. Only two or three sections of the main atlas have been published, but materials are being gotten together for the atlas with the expectation that no more sections should be published until the new census material is available so as to bring them up to date. This historical geographical material shows what has taken place in the production of wheat, for instance, where was

the wheat production in 1840, in 1860, and clear on through, showing how wheat went out of one region as it was developed in certain other regions. It shows what took the place of wheat in Wisconsin, for instance, which became a dairy region. It shows, likewise, the history of wool production, and exactly what has happened to the wool production through a series of years. It used to be in Vermont, and only in those regions in the East, but now the dairy industry has crowded it out, and it has gone on farther toward the West and farther from the markets, as would be expected, and it helps one to very much better understand the regions in which woolgrowing and the sheep industry will be permanently successful, and the regions in which we could not expect that the sheep industry would on any large scale be expected to be profitable.

Mr. HARRISON. In other words, by a study of what has happened in the past, we can determine, to some extent, what is likely to happen in the future.

Mr. TAYLOR. Yes; it gives us a much broader basis for passing judgment on the difficult problems such as are before us to-day.

LAND ECONOMICS.

Now, on the question of land economics, we have started those studies in the last year and a half of our work. We published one bulletin on the Iowa situation, as it developed a little more than a year ago. I will say that the results of that study were mimeographed and out very early. A copy of the bulletin is here, if you care to see it.

Another bulletin has been prepared upon farm-lease contracts. You may be interested to know that a 40,000 edition of this was licked up inside of a month or six weeks, and the Public Printer has proceeded to print a new edition of it. There seemed to be a very great demand for them.

Mr. RUBEY. Whom did this demand for this farm-lease contract come from?

Mr. TAYLOR. It came from the farmers throughout the country. The purpose of that bulletin is to help the farmer and the landlord to think through all the points they need to take into account, and the purpose is not to give them a stereotyped form, but rather to stimulate them to take out point by point the things that should be considered in making a lease, so that they will go at it rationally and work out a specific lease that will suit their own conditions.

Another phase of the subject which is being studied is that of land settlement.

Mr. ANDERSON. I do not know, but I think you will promote a lot of law suits.

Mr. TAYLOR. This was gone over very carefully by the legal division of the department.

Mr. BYRNES. Having in mind the laws of the various States?

Mr. TAYLOR. It is the economic rather than the legal side of the question that is being emphasized here.

Mr. BYRNES. But if it should induce many men to attempt to draw up their own contracts without consulting anyone familiar with the laws of the particular State, it might get them in trouble.

Mr. TAYLOR. It is not aimed to stimulate that, but rather that the proper points be taken up and thought through. Generally when a farmer rents a piece of land he takes some stereotyped form of lease without reading the fine print in it, and they sign it and go ahead, and they find many things left out of it that ought to have been in and many things in it that they did not know were there, and it is with a view to stimulating more thought and trying to connect up the account book with the making of a lease. The economic terms of a lease are an important thing, according to my point of view, and if the farmer contracts to do things that he can not possibly do he is more likely to get into trouble than if he contracts to do things that he can do. If you base his agreement as to the things he agrees to do upon a record of what can be done and what has been done, he is very much more likely to be able to meet the situation.

The whole question of land ownership and tenancy is being studied from the standpoint of the forces which are tending to increase tenancy or increase ownership. There is a close connection between the study of credit and the ownership of land. More important than credit in the ownership of land is an opportunity for earning and saving the money with which to invest in land and then to pay off the debt after the debt has been made.

Land settlement is being studied from the standpoint of different methods that are being used in getting settlers into these newer regions. Studies are being made at the present time of the three Great Lake States of Michigan, Wisconsin, and Minnesota, calling attention to the opportunities there and the needs of the settler, and to the different methods being used in building up new communities.

Mr. BYRNES. What do you really hope to accomplish by the bulletin on farm-land values in Iowa?

Mr. TAYLOR. The investigation there was made with a view to showing what foundation there was for the increase in values. If you will note, surveys had been made in 1913 showing the earning power of a lot of those farms. We went right back and surveyed the farms in 1918, to see what increased earning power there was, and to what extent it was due to the increased price simply of the products, and it was very clearly shown that the high land values, the high prices at which land was being sold in the summer of 1919 were not justified.

Mr. BYRNES. Well, we all knew that.

Mr. TAYLOR. Yes.

Mr. BYRNES. It was due to speculation more than anything else.

Mr. TAYLOR. But we showed specifically what the net basis was. Everybody apparently did not know it, because certainly large numbers of people proceeded to buy land at the high prices.

Mr. BYRNES. There were several things that contributed to it. The man who bought, the way land was being sold in that vicinity, naturally thought he was going to make a little money by buying the land.

Mr. HARRISON. This bulletin points out the effect of those things to agriculture and to the Nation as a whole. The department could not send out a statement based merely on the assumption of what was happening. We had to get the facts.

Mr. BYRNES. What is the effect of it?

Mr. TAYLOR. You mean the effect of inflation?

Mr. BYRNES. I can tell you what will be the effect of it. The man who paid that high price for his land, when things return to normal will find that he is in debt because he can not secure a return from the land that will justify the capital he has invested in it. Every man who bought that land is more familiar with the agricultural industry than I am now, but when he bought he took his chances.

Mr. TAYLOR. But a large number of tenant farmers bought. A large number of these men have no perspective, historically or comparatively, and they do not know what is going on in the world. They get in their minds that prices are up, and they do not believe there will be such a thing as dollar corn again. They think the price has gone clear beyond that, and in that state of mind they go ahead and buy.

Mr. BYRNES. Admitting that was true, if you could not save the people by taking immediate action to convince them that things would return to normal, now that things have returned to normal how can you hope to help them now?

Mr. TAYLOR. From then on it becomes the completing of this record in order that it may be useful in the future. But I want to say that that is not all we did. We had press notices continually going in that country during this period, not based upon those facts and conditions, but based upon exactly what had happened under similar circumstances in like periods.

What happened in America after the Civil War and what happened in England after the Napoleonic wars was clearly in our minds, and we went right after it. We had a man out there who visited 66 out of the 99 counties in Iowa, getting records of what was taking place, and continually raising questions, and one of our agents went into a real estate office one morning to ask about a transaction that had taken place, in order to get the record of what had taken place, and in each instance we found out how many times the farm had changed hands, what it sold for the first time, the second time and so on, and before he opened his mouth to ask the real estate man any questions the real estate man threw down his morning paper and said, "You see that damned thing!" The agent said, "What?" "Well," he said, "one of these Government men gave an interview yesterday in which he said that these land prices were too high, and that has spoiled two transactions for me already to-day. I had ten men who were just ready to sign up the papers this morning. But when they saw that they said they thought they had better think over." So that is one time, I believe, where the doing of the work was very helpful right while it was being done. In fact, our men went right through that territory and asked questions, and I believe kept a very great number of people from buying up this land.

At the present time we are following up the record and hope to be able to write the history of the Iowa land boom and its bad effects, so we will make it a matter of history for the future.

Mr. ANDERSON. I expect that the fellows who went through the boom will not need any advice from now on, and the fellows who come on 20 or 30 years from now will not read that bulletin.

Mr. TAYLOR. It depends on whether you have any faith in education at all. The result of this will work itself right into the whole educational material. What you say may be true, but I believe it is worth while to get this material in shape so it can be useful.

RURAL LIFE STUDIES.

Mr. ANDERSON. Let us take up the next item, farm life studies.

Mr. RUBEY. There is one other item there—land settlement and colonization. What do you do there?

Mr. TAYLOR. We are studying the methods that are being used by the different land companies.

Mr. RUBEY. You may have already discussed that; I do not know.

Mr. ANDERSON. No; you did not discuss that particular item, did you?

Mr. TAYLOR. Only in a general way. I started to discuss it, and then other questions came up. But you are familiar, no doubt, with the fact that some land companies are using methods which are highly reprehensible, and other companies are using methods that look toward the welfare of the settlers and the permanent development of the country. The work at the present time is a description of what is going on. We are taking an inventory of the methods of settlement and preparing the basis for an educational campaign on the right methods of settlement. If there is to be any legislation, and I believe there will have to be, on this question of the selling of land and land development, because so many people are being robbed by being sold land that has no value, it is my opinion that the basic materials which are being brought together will form the right basis of any legislative action that may be taken.

Land policy is put down here as one of the goals that all this looks toward, so the whole question of land ownership, the means of acquiring land, and the relation between landlord and tenant, and the relation between the settler and the land company where he moves into newer sections, are all looked upon as important in solving the problem with relation to the farm and the land.

The farm-life studies all look toward a study of the methods of improving country life and making it more attractive from the standpoint of the home and the community, but with the greater emphasis here upon the community and the development of right relations in the community. I should say that this work at the present time is in this stage, that communities that have a better organized life and a more satisfactory country life are being studied and the results being published with a view to stimulating leadership in other communities where less development has taken place, but it all centers upon making farm life more attractive and keeping in the country the better element of our rural population. We are not expecting but what there will be more or less movement from the country to the city as time goes on, and yet we want country life to be attractive enough so that we will keep in the country the best element of our population rather than taking away the better and simply leaving the less efficient and less capable as the basis of our farm life.

Mr. ANDERSON. Just what can we do about that?

Mr. TAYLOR. We can study the kinds of farmers' clubs that have been organized successfully and stimulated good social life in the community; we can study the relation between the small town and the surrounding community, with a view to getting the small town and the surrounding community to work together. For instance,

the library in a small town should be built on the basis not only of that town but all of the people in the trade center of that town; likewise the school and likewise the road system and the social life. A certain amount of neighborhood community life can also be stimulated and improved through the local farmers' club, but some of the things that make farm life attractive naturally tie up with the trade center.

Mr. BYRNES. If there is not incentive on the part of the local people to do it for business reasons, I am afraid we can not go very far in inducing them to do it for other reasons.

Mr. TAYLOR. Suppose they have the incentive, but hardly know how to go at it and do it. If some one community has done it well, by writing up the results in that community and giving directions we can help them a great deal. For instance, take the question of putting up a community house, which has been done in a great many communities. What kind of a community house do we want, and how much will a community house like that cost, are questions that naturally come up. A little pamphlet is worked out jointly by this section and the people in rural engineering, giving samples of what might be and what actually is. Here is a house that has been built in this particular locality, what it is used for, the number of people there, what kind of material is used, and what it cost. That is a great help, specifically to those people with incentive. Furthermore, their knowledge of what is going on in other communities may stimulate the people in other communities to do something for themselves. On the theory that education can be made effective, this gives the basic material for that education for improving country life.

Mr. RUBEY. This last item, farm-life studies, etc., appeals to me much more than those you have just previously mentioned. Take the question of health. Do you study the health surroundings and conditions of the farm?

Mr. TAYLOR. We do not aim to do the work that is being done by the Public Health Service. We study the effect of it. Both in tenancy and in farm-life studies we get the effect of bad health upon farm life.

Mr. RUBEY. You do not study questions of how to prevent it, and all that?

Mr. TAYLOR. No, sir; that is done by the Public Health Service; that does not belong to us.

Mr. RUBEY. There is some mighty good work that can be done along that line, and I hope they are doing it. There came under my observation very recently a case where five people, three adults and two children, slept in one room. It was cold, and they kept a fire, and there was not a bit of ventilation. Five people slept in that room the entire night without any ventilation whatever, except what might come in under the door or through the crevices in the windows.

There also came under my observation a farmer who had a big fireplace. The physician stated that in that neighborhood everybody who had a fireplace had very little sickness in the family, and those who did not had quite a good deal of sickness. It was not the fireplace; it was simply a question of ventilation, and I hope the Public Health Service, or some other service, will bring those things to the attention of the people.

STATE COOPERATION.

Mr. TAYLOR. This last item down here, State cooperation, may be explained in this way: The extension work of the Office of Farm Management, so far as the North and the West are concerned, is carried on through the farm-management demonstrators who are connected with the States Relations Service, but for some reason that I can not explain, because it was just simply this way when I came here, it was not done through all the Southern States. The States Relations Service does not provide farm-management demonstrators in the Southern States, and so the Office of Farm Management was providing those direct out of the funds of the office instead of the States Relations Service funds, and that has continued in the same way. I think, possibly, in other bureaus the extension agencies for the whole country are paid for out of the bureau funds, are they not?

Mr. HARRISON. To some extent. The matter has been discussed by the different bureaus.

Mr. TAYLOR. In this particular office it is split in that way. The North and West are handled by the States Relations Service, and the South is handled directly by the office.

Mr. ANDERSON. Why should it be split in that way?

Mr. TAYLOR. That is a matter of organization before I came into the office.

Mr. HARRISON. All the work is done through the States Relations Service. What you mean is that the Office of Farm Management is paying the salaries of some of these men who are working through the extension agencies, just the same as some of the men in the dairy division, for example, are paid.

Mr. BYRNES. You do not propose to spend any more money?

Mr. TAYLOR. We are proposing an increase of about \$8,000 for this extension work in the South, because there are a number of States in which we have none at the present time.

Mr. BYRNES. That is to say, \$7,320, for State cooperation, is it not?

Mr. TAYLOR. That is the increase.

Mr. BYRNES. What States do you propose to spend money in that you are not now spending money in?

Mr. TAYLOR. Virginia and South Carolina are both without demonstrators at the present time.

Mr. BYRNES. What do they do?

Mr. TAYLOR. They do this: They work largely with and through the county agents in taking the results of investigations of the Office of Farm Management and getting them worked down to the farm. That is the extension agency of the Office of Farm Management. We have one man in the office who formerly was a demonstrator, and he showed unusual keenness in picking up the information that would be effective in this extension work, so we brought him into the office, and he is devoting his entire time to watching the research work of these different sections, pulling out of that anything that will be helpful here or there, and getting it out to the demonstrators. It is the connecting link, and we feel that he is very helpful.

Mr. BYRNES. The demonstrators carry it to the farmers?

Mr. TAYLOR. Yes; they work with the county agents in carrying it to the farmer. I wish to say that up to the present time the major

part of the work of the demonstrators has been in stimulating farm bookkeeping on the part of the farmers by working through the county agents, and holding farm bookkeeping schools, going and helping the county agents. There is a good deal of turnover in the county agents, and the county agents need some help in getting started in this work. A county agent may be new this year, so the demonstrator will have to go with him and help him for a while. After that the county agent will run on his own wheels and not need any help, perhaps, until the year after that, when a new agent may be in that county, and the demonstrator has got to go back and keep that work going.

We do a good deal of work on the educational side in the way of better farm leases also.

Mr. ANDERSON. Is there anything further, Dr. Taylor?

Mr. TAYLOR. I think that is all.

MONDAY, DECEMBER 20, 1920.

WEATHER BUREAU.

STATEMENT OF PROF. CHARLES F. MARVIN, CHIEF OF THE WEATHER BUREAU, DEPARTMENT OF AGRICULTURE.

READJUSTMENT OF AND INCREASES IN SALARIES AND FORCE.

Mr. HARRISON. Item No. 1 relates to the salary of the chief of the bureau and will be discussed by Dr. Ball when he appears before the committee. He will take up all these recommendations with reference to the salaries of the chiefs of bureaus. Prof. Marvin will go ahead with item No. 2.

GENERAL STATEMENT.

Mr. MARVIN. Mr. Chairman, I have a short general statement I should like to make with your permission. It will take but three or four minutes and it gives a view of the whole situation which confronts the Weather Bureau.

In urging the needs of the Weather Bureau upon this committee and Congress I feel I can not lay too much stress upon the fact that although Congress has placed the Weather Bureau in the Department of Agriculture, where it is rendering a great service to the stock-raising and agricultural industries of the country, nevertheless the organic act of the bureau imposes upon it many other duties related to commerce, the navigation of the air and the oceans, the gauging and reporting of rivers, the issue of warnings of floods, and the like.

This committee will therefore, I hope, have a sympathetic concern for all needs of the Weather Bureau in its manifold activities. Under nearly stationary appropriations for several years, during which the costs of supplies and services have so greatly increased, the bureau finds much difficulty in meeting the demands upon it.

In fact, a number of curtailments have been unavoidable, either because of the lack of funds for materials and supplies or because of the lack of necessary trained personnel.

Let me show you this chart, which gives a fair picture of the annual appropriations since 1915. This heavy blue line shows the amount allowed by Congress for general forecasting and surface observation work of the bureau. Taking 1915 as 100 per cent, there was a small reduction in 1916; an increase of 2½ per cent in 1917, and in 1918 and 1919 an increase of about 4 per cent, and, thereafter, that part of our funds suffered small reductions in 1920 and 1921. During the war there were small increases granted for erecting a building at Cape Henry, Va., and for cable and wire needs; and, in addition, an appropriation of \$100,000 was made first in the Army appropriation bill for aerological observations, in aid of aviation. The appropriation has been continued since and, with the other appropriations, show an increase of about 11 per cent in the appropriations for the whole bureau since 1915; but the basic appropriations of the bureau have had an increase of only 5.6 per cent.

I do not hesitate to say that during these several years the bureau has improved greatly in the efficiency and excellence of its service. Never before has meteorology and weather forecasting been so seriously received by the public and applied in the efficient conduct of all kinds of industrial and commercial affairs. Almost every day of the year is marked by some distinct service in the form of warnings of dangerous winds, or of floods, and from time to time of dreaded hurricanes; of advices to shippers of perishable products; of warnings of frosts to the horticulturists, or of cold waves and heavy snows to the stockmen; and a multitude of special services in the interests of literally the whole Nation. The very dependability of these warnings and advices makes new demands and imposes new obligations upon the bureau and its forecasters.

With a limited personnel whose rate of pay still awaits the looked-for action of Congress to adjust to present-day conditions the bureau is at a standstill in meeting its obligations. In fact, the whole organization is steadily failing in its most vital element—its man power. I am at a loss for words to make emphatic enough the crisis in its affairs that the bureau is now facing in the matter of personnel. Professional meteorology is not like chemistry, engineering, medicine, law, electricity, and the other professions. The colleges and institutions of learning are annually turning out thousands of graduates in these several lines of occupation. Only two or three universities have courses in meteorology, and very few students make meteorology a life work. The Weather Bureau has literally made its own personnel entirely within its own walls. Conversely, the personnel, its leaders and its rank and file, have literally carried the bureau forward to its present high state of efficiency. This is a result and a process peculiar to the Weather Bureau, which began its existence just 50 years ago last November. There were then no precedents, no guides to pattern after. The present men and the service perfected, each the other, as time and experience determined. Now we have the perfected result, a daily service of meteorology applied to the benefits of commerce, agriculture, and navigation.

which must be maintained at its present standard if the expected needs of people are to be satisfied.

Where is the personnel to come from? The universities can not supply proficient forecasters or even thoroughly trained meteorologists, except in a very few cases. Trained meteorologists or professional forecasters can not be employed from among the industrial or commercial classes. For a long time to come men for this work must be trained within the Weather Bureau itself.

Weather Bureau salaries no longer attract even bright high-school graduates, not to mention mature and thoroughly educated graduates of universities. Ever since the war vacancies in the entrance grades in the Weather Bureau have been filled by many temporary appointments without civil-service status. There are about 75 such at the present time, and the most earnest efforts of the Civil Service Commission are unavailing to induce young men to enter this service. The small entrance salary—\$1,080 and bonus—but especially the low salaries and slow and small advancements in the higher grades are an absolute barrier to the Weather Bureau in recruiting its personnel with men of the talents and ability necessary for an efficient organization.

We still have a nucleus of the old guard, many faithful men of whom some did duty in the early days with the Signal Corps. No matter how loyally these men hold to the work they have learned to love, the manpower of the Weather Bureau is now menaced as never before. We have already lost a number of strong men. Pickering men who rendered military service as captains, majors, and colonels during the war. Even now, during times of peace, their meteorological training commands military opportunities at salaries 75 to 100 per cent greater than it is possible to offer them in the bureau. These men simply could not afford to reenter or to stay with the bureau. Responsible Weather Bureau men in charge of stations are leaders and representative men in their respective communities. The salary of these men is not a fair living wage. Many are not living on their salaries, but they are using up their small savings of earlier years.

The older men and leaders of our present organization are certain to pass with time, and the penalty for failure to meet the present crisis may not show disastrously now, but will certainly do so in the years to come, when possibly some great flood or hurricane comes on, inadequately heralded, and takes its toll of lives and millions of dollars worth of property, far in excess of the trifling sums asked for in these estimates, which if granted will enable the bureau to inaugurate the rehabilitation of this useful service and set about the replacements of its personnel in a way that will safeguard the Weather Bureau of the future.

This work of rehabilitation should have begun at the close of the war. It can not now be longer delayed without serious consequences. I have stated before to this committee, but it will bear repetition, that the men of the Weather Bureau are the sentinels ever on guard to warn of impending dangers and thus make possible timely measures of protection and precautions to ward off and minimize the injuries and losses which follow in the wake of great atmospheric disturbances. While millions, even billions, of dollars

are being appropriated for the maintenance of a huge war machine, is it economy to withhold from the Weather Bureau the small increase now needed to save an efficient organization from disintegration, waste, and inefficiency?

The problems of meteorology and weather forecasting are extremely difficult and technical. Let me ask you seriously, gentlemen, what is your Weather Bureau worth to the Nation with a cheap, incompetent, inefficient personnel? The small increases now asked for are necessary to assure an efficient organization. Is it wise legislation to withhold it?

Gentlemen, I urge this upon you with all the power I can command; it is my duty to do so, and to tell you these convictions as fully and as forcefully as I can. I can do no more and must leave the action to you. The Weather Bureau now needs your support as never before.

Gentlemen, I have been animated by those thoughts in preparing the estimates which are here and which provide for the rehabilitation of the work of the bureau and the realization of those ideas.

GAUGING OF STREAMS, ETC.

Mr. ANDERSON. And, may I ask you, Doctor, of what your work in forecasting floods consists?

Mr. MARVIN. The work in the districts subject to floods along the major streams and rivers throughout the United States, consists of gauging the river at various points. Those gaugings are reported telegraphically to certain centers and from the reports received in that way the forecaster makes predictions of stages and flood crests to occur on certain dates, at certain points down stream. Such forecasts depend on the rainfall as well as the water already in the stream, including the rainfall expected to come over the watershed.

Mr. ANDERSON. Are not these gaugings taken also by the Department of Commerce?

Mr. MARVIN. No, sir. I do not know of any gaugings that are taken by the Department of Commerce. The Engineer Office of the War Department takes certain gaugings in conjunction with the Weather Bureau in many cases; that is, our gaugings supplement each other. But I do not know of any gaugings taken by the Department of Commerce.

Mr. ANDERSON. I was under the impression—it may be an erroneous one—that the Department of Commerce did that sort of thing and had local men who took the stages of the river and reported the rainfall.

Mr. MARVIN. No, sir; I do not know of any gaugings of that character at all. When the Army engineers are engaged in construction work for flood prevention and protection, it is very often necessary for them to make intensive gaugings in between the points covered by our gaugings, and there is very close cooperation between the gauging work of the Weather Bureau and the Army Engineer Service. The Geological Survey makes certain stream discharge measurements, which is a different thing. They gauge the volume of water flowing down the stream at different times—in general after flood times. Our gaugings, except in the navigable streams, are made chiefly at the time of flood conditions.

Mr. ANDERSON. Are those gaugings made by men employed for that purpose or are they made by your regular force?

Mr. MARVIN. They are made in large part by men employed for the purpose who receive a small amount for the reports rendered. We have two classes of observers in the river and flood service—one reporting stages of the rivers, the other reporting rainfall. Those men make observations under certain conditions and file telegraphic reports and receive from \$10 to \$15 a month for that service. In some cases it is an all-the-year-round service and in other cases service only during the flood season.

If you wish, Mr. Chairman, I shall now take up the items of the statutory rolls. Item 2, the assistant chief of the bureau, there is an increase asked for placing his salary at \$4,000. At the present time and ever since 1912 it has been \$3,250.

Item 3 is an increase for the chief clerk of \$500, making his salary \$3,000. That salary formerly stood at \$2,500. In the appropriation for 1914 it was reduced to \$2,500 and has so remained to the present time. This officer has large responsibilities on account of our very extensive field service. We have over 200 stations in the field, and the chief clerk is in charge of the correspondence and personnel of the field service and is an administrative officer of the bureau; furthermore, under the law he is authorized to act as chief of the bureau in the absence of the chief and assistant chief. The \$3,000 salary is more nearly commensurate with the conditions that prevail at the present time.

Item 4, one chief of division of stations and accounts, there is no change.

Mr. ANDERSON. What does the Chief of Division of Stations and Accounts do? Is that an accounting officer?

Mr. MARVIN. He is the accounting officer of the bureau. He has charge of the salary roll and the expenditure of funds and auditing of accounts and their transmission to the department; also, he has charge of the rental of the buildings of the Weather Bureau and the costs of repairs and upkeep of the Weather Bureau buildings. We have a number of Weather Bureau buildings in the field, as you know. The title, "Stations and Accounts Division" has reference to his duties as being in charge of the station offices, building repair repairs to furniture, etc.

The chief of the printing division is the same. No change.

Item 6 covers an increase of \$500 each for three men, three chiefs of divisions. Those men have been in charge of divisions of the bureau for a great many years at salaries of \$2,000 each. As the note says here, these officials have served in the department for periods of from 22 to 40 years. We are asking for this increase of \$500 each for these three positions.

Mr. ANDERSON. Those are administrative divisions; not technical divisions?

Mr. MARVIN. They are partly technical divisions, but chiefly administrative divisions such as the telegraph service of the office, the division of supplies, and then the division in charge of marine reports and observations. The latter is the section that takes charge of reports received free from the ships on the ocean. We have several thousand cooperative observers in the way of ships at sea, which report dai-

the meteorological conditions along their routes and file them by mail when they arrive in port. They are charted and handled in this so-called marine division. The information received from these reports is used on the hydrographic charts for the safety of mariners and navigation.

Item 7 is for four executive clerks at \$2,000 each. Those are new places and together with certain other places mentioned below in the clerical grades are changes to provide for increased compensation for deserving men who have been with the bureau for many years and whom we feel should be advanced to better compensation to enable up to keep in the bureau people who will preserve the standard of efficiency that is necessary for our future needs. At the present time men are getting out just as fast as they can. We lost a \$1,600 clerk only a short time ago. He went to the Patent Office where he could get more pay and better opportunities, and we have not been able to fill the vacancy as yet.

Mr. BYRNES. What kind of a clerk was he?

Mr. MARVIN. He was in the river and flood division.

Mr. BYRNES. Doing what kind of work?

Mr. MARVIN. He was engaged on the technical part of the work in connection with the schemes, as we call them, for forecasting the flood conditions in the different rivers. We take observations of the stages of the rivers and the rainfall over the watershed and the conditions that prevail and work up formulæ and methods by which the forecast of the flow of water during flood conditions can be carried on successfully.

Mr. BYRNES. What kind of work is he doing in the Patent Office, do you know?

Mr. MARVIN. He is one of the examiners. He passed the examination and was appointed through the Civil Service Commission. He resigned to accept the higher salary and better opportunity.

Mr. ANDERSON. What do those clerks do; what differentiates them from any of the other clerks that you have?

Mr. MARVIN. They are head clerks under an official in charge of the division. In his absence they become the administrative officers of that division and otherwise have technical and executive responsibilities.

Mr. ANDERSON. How many divisions have you in your bureau?

Mr. MARVIN. We have about 10 altogether and some additional sections. We desire to have in each of those divisions a high-grade clerk who is competent to take the position of the official in charge in his absence.

Mr. BYRNES. These four clerks—you now have no such clerks in your division?

Mr. MARVIN. No, sir; there is no such grade. It is a new grade that carries that salary with it. The ordinary grade of clerks are classed as——

Mr. BYRNES. Do you provide anywhere for a reduction, then?

Mr. MARVIN. Yes, sir.

Mr. BYRNES. Where?

Mr. MARVIN. This carries a reduction of 10 clerks at \$1,000 and 5 at \$900.

Mr. BYRNES. That would be \$14,500. And you also provide for some new places?

Mr. MARVIN. Yes, sir.

Mr. BYRNES. Two clerks of class 3, two clerks of class 2, and four clerks of class 1. Is there a net increase or decrease?

Mr. MARVIN. There is a net increase of \$2,600 and a reduction in the total number. It is a frank request to pay these men more money, to pay them what they ought to have. And it is the only way we can get good men to come into the service. Men will not come into the service if they see the men ahead of them are getting \$1,200 and \$1,400 when they know that is all the job will be worth to a man who probably stays there the rest of his life.

Mr. BYRNES. By getting better men at higher salaries you could not do with less than one; you could only reduce one man?

Mr. MARVIN. In this case; yes, sir. That is what we feel is just and fair.

Mr. BYRNES. But they will not accomplish much more work?

Mr. MARVIN. They are doing it, and that is what we expect of them now in many years. It is not that we are going to accomplish so much more work with this increased expenditure for salaries, but these men have been receiving these salaries for many years, and salaries and wages to-day are higher all along the line, and we must pay more for the same amount of work. These leading men are a faithful and industrious workers. But what are we going to do in the future when these men are no longer with us? They are not going to live forever, and we have got to get new men.

Mr. ANDERSON. The salaries will be available for the promotion of other people.

Mr. MARVIN. But we can not get in any good material; we are not getting the proper kind of material in the bureau, men of the right type to fill the vacancies are not attracted by the present salary scale and prospects.

NUMBER OF VACANCIES.

Mr. ANDERSON. How many vacancies have you on your statutory roll now?

Mr. MARVIN. I am not prepared to answer that question numerically, but there have been 10 or 12 vacancies temporarily at times. Some would be filled and new vacancies occur again. I can make that statement, Mr. Chairman, if you will permit, and give it correctly in the record.

Mr. ANDERSON. I should like to have it.

(The statement follows:)

There is now one clerical vacancy in the \$900 grade, also three vacancies to retirements, which can not be filled on account of the provisions of the retirement legislation.

Mr. BYRNES. Do you not believe that there is going to be an improvement in that situation?

Mr. MARVIN. We have been waiting for several years for that improvement.

Mr. BYRNES. But you know that during the war, with the scarcity of the supply of labor everywhere, of course, you had a terrible time getting men to enter the service, but I can tell you that in the last 60 days I have noticed quite a change in the situation from my correspondence, in the number of men who are seeking help in securing

positions of all kinds. They are asking for indorsements, and I imagine that in the next few months you will find quite a change, and you will find men ready to enter the service.

Mr. MARVIN. It is possible. I can not gainsay what the future may hold forth if these salaries are held down to the prewar level, but I feel that we must make some increases here; if not to the full degree as outlined in these estimates which I have studied and worked over very carefully to meet the situation, as it seemed to me, then to some lesser degree.

Mr. BYRNES. For instance, if Congress should give you four executive clerks, you could not get along with any greater reduction in your lower-grade employees?

Mr. MARVIN. I am prepared to say that the number of persons employed in the Weather Bureau is practically the minimum we can actually get along with. If we reduce the number it will mean that we will have to cut out more work.

Mr. BYRNES. You have not much faith in two men at, say \$1,800, doing as much work as three men at \$1,200?

Mr. MARVIN. I have a good deal of faith in that where the work is of a form that it can be done in that way, but our work is divided up and is very diversified, and I think we are using the minimum number of men. We have no surplus of men, and we need all the men we are asking for here. We are not doing all the work we should.

Items 8 and 9 carry forward these increases of two clerks of class 3, two of class 2, and four of class 1, with a net reduction of one clerk in the whole number, namely, ten at \$1,000 and five at \$900 are dropped.

Mr. ANDERSON. Then you are making your lowest grade of clerks class 2; you will not have any clerks on the statutory roll below class 2?

Mr. MARVIN. Class 1. Yes, sir; we drop the clerks at \$1,000. Class 1 is \$1,200, class 2 is \$1,400.

Mr. ANDERSON. You have 50 clerks here of class 1?

Mr. MARVIN. Yes, sir.

Mr. ANDERSON. And you will have none below that?

Mr. MARVIN. None below that; no, sir.

Mr. ANDERSON. Taking into consideration the bonus, then your lowest-paid clerk will be \$1,440?

Mr. MARVIN. \$1,440 with the bonus, with a basic salary of \$1,200.

Mr. ANDERSON. Are some of these clerks stenographers?

Mr. MARVIN. Very few of the clerks in these lower grades are stenographers. We get what we call clerk-typists from the Civil Service Commission in the lower grades.

Mr. ANDERSON. What do you have to pay for a stenographer?

Mr. MARVIN. From \$1,200 to \$1,400, if we can get them.

Mr. BYRNES. You mean without the bonus, now?

Mr. MARVIN. Yes, sir. We have stenographers in the bureau that are receiving that amount of money, but we can not get new ones for those rates.

Mr. BYRNES. You can not get a stenographer to-day for \$1,200, counting the bonus?

Mr. MARVIN. We have difficulty in getting certifications and acceptances from the Civil Service Commission of people who are

capable stenographers. We get typists with a knowledge of stenography, for instance, certified by the Civil Service Commission, but when we come to actual dictations, etc., those people are not satisfactory stenographers. We have had difficulty in filling the need for stenographers. The stenographers that we have are those who have been able to hold by promotion to the upper grades.

Mr. ANDERSON. What are you paying stenographers now?

Mr. MARVIN. Some of our stenographers are in those \$1,400 and \$1,600 grades.

Mr. ANDERSON. They have no administrative duties?

Mr. MARVIN. Some of them have, partly; yes, sir. Those stenographers are in divisions under the chiefs of divisions, and as assistants to the executive clerks, so-called, or the head clerks of the divisions.

We are asking in item 14 for one telephone operator, and that is included and explained in the note under item 7.

Mr. ANDERSON. Who operates that telephone now?

Mr. MARVIN. We have a woman operator. We have found that satisfactory work can not be secured from minor-grade employees.

Mr. ANDERSON. Is she going to be promoted under this item?

Mr. MARVIN. No, sir; this is a designation that we want to give to her for that particular place at \$900.

Mr. ANDERSON. Do you take her off anywhere else? I understand this telephone operator is the same girl you have been employing out of some other fund for some other position?

Mr. HARRISON. Is she not one of the five \$900 clerks that you propose to drop in item 13?

Mr. MARVIN. Mr. Chairman, I can not answer that question. I will insert the answer in the record.

(The statement follows:)

The telephone operator is now carried as a messenger at \$660, and if this item (14) is allowed the messenger place will be retained in item 52 at \$660. She has taken the examination for the position of switchboard operator, and her appointment will depend on whether or not she gains eligibility and certification; if she does not, appointment will be made of some other experienced operator from eligibles certified by the Civil Service Commission.

Mr. ANDERSON. Do you have to pay a telephone operator more than they pay them in the telephone stations here in Washington?

Mr. MARVIN. I do not know, Mr. Chairman, just what the salaries in the telephone exchanges are, but as we have one telephone switchboard there with about 45 branches on it, and formerly we used to use messenger boys and other employees in those grades to operate the telephone, but the service, with the loss of capable messengers, etc., came to be so bad that we had to put a dependable person there. The people from the outside call for forecast and weather information. In the mornings especially the calls are numerous, and we had to have a dependable person there to handle the service. We have this woman on the switchboard now, and the service is very satisfactory, and the item is submitted, as we feel it is a necessary expenditure. She has been willing to serve at the present low salary with the expectation of securing a permanent position at a proper salary. The Civil Service Commission has permitted her to do the work until she completed two years' experience.

rience at a switchboard—one of the essentials for examination as switchboard operator.

Mr. ANDERSON. The reason I asked the question is that I know that the telephone company here is advertising for telephone operators at \$17 a week, which is a little less than \$900 a year, and you are apparently paying this woman \$1,140.

Mr. BYRNES. And the girl who goes to the telephone company is not going to get annual leave or sick leave.

Mr. HARRISON. I understand that the average salary paid by the telephone company for experienced operators is \$21 a week, Mr. Anderson. It starts them in at a lower figure, and I think it has recently reduced the entrance salary.

Mr. BYRNES. I suppose that is true, that \$17 is the salary at which they start them, but what does it make at \$21?

Mr. ANDERSON. \$1,090.

Mr. HARRISON. They have to go through a course of training before they become experienced operators. I understand the company pays its supervisors—girls who supervise the work of five or six operators—from \$25 to \$30 a week.

Mr. ANDERSON. It certainly is not a very difficult job to run a switchboard with 30 telephones on it.

Mr. HARRISON. It is not a difficult job, but it is a very tiresome job and very exacting.

Mr. MARVIN. It requires, you know, Mr. Chairman, on account of the dissatisfaction of outside people who make calls and get no response, a dependable person, and in that sort of a case a low-salaried, irresponsible person is not going to give you the service that is necessary. This figure is, I believe, a fair one compared to that paid for the same sort of service elsewhere, and we feel that it is no more than right.

Mr. ANDERSON. All right; let us take up item 15.

Mr. MARVIN. The addressograph operator is a woman at \$1,000, who handles the mailing or addressing of the publications, cards, and things that are sent out from the Publications Division.

Mr. BYRNES. Who is now doing it; that is in the hands of some one?

Mr. MARVIN. I am unprepared to answer that question, other than this information given under item 7.

Mr. BYRNES. It is all tied up in that change in those executive clerks, I imagine. All I want to know is, you now have somebody doing this work?

Mr. MARVIN. Yes, sir; there is some one there, and the provision of the title is to give the person a place and a compensation on the roll that shows for the work that he is doing and the amount he receives for it.

Mr. BYRNES. If you do not know offhand, put a statement about it in the record.

Mr. MARVIN. I will be glad to do that.

Mr. HARRISON. What Mr. Byrnes wants to know is what he is receiving now and what his present title is.

Mr. BYRNES. That is what I want to know.

NOTE.—This employee is a clerk (addressograph operator). The item involves no increase in salary, but merely a change in title to correspond with the work performed.

Mr. MARVIN. The next items are 16 and 17. It is proposed to drop one foreman of printing and substitute one supervising pressman. That is for the purpose of providing additional compensation, to make the salary of the employee more nearly comparable with the salaries paid for similar work in the Government Printing Office.

Mr. BYRNES. What you propose to do is this: The same man is going to continue to do the same work, but you are going to call him a supervising pressman instead of a foreman of printing? m

Mr. MARVIN. Yes, sir.

Mr. BYRNES. And give him \$200 more?

Mr. MARVIN. Give him \$200 more. The title of foreman of printing came into the bureau many years ago, when the work was very different from what it is at the present time in the printing division, and the title of supervising pressman better describes the duties he is performing, and the salary of \$1,800 is more nearly comparable with the salaries in the Government Printing Office for work of pressmen who have no supervisory responsibilities. I am told that in the Government Printing Office supervisory pressmen receive \$2,300.

Mr. ANDERSON. How many men do they have under them—these men who receive \$2,300?

Mr. MARVIN. I do not know just how many men they have under them in the Government Printing Office, but in the printing office of the Weather Bureau these men would have supervision over in the neighborhood of six men.

Mr. ANDERSON. Here is the situation you have here, as I see it: You have one supervising pressman, one supervising lithographer, and one supervising compositor for 15 or 20 men.

Mr. MARVIN. No, sir; they are different groups of men.

Mr. ANDERSON. Then you have one boss for three or four pressmen, you have another boss for half a dozen compositors, and another boss for three or four lithographers. You certainly do not need that many bosses for that number of men. Besides, over here in item 5 you have one chief of printing division.

Mr. MARVIN. The chief of the printing division, of course, has the entire printing division of the bureau under him.

Mr. ANDERSON. Suppose he has; he has not over 20 or 25 men under him.

Mr. MARVIN. There is no change in the salary of the chief of the printing division.

Mr. BYRNES. But what Mr. Anderson means is that you are not going to have any privates in the ranks there; you are going to have all generals in this organization.

Mr. ANDERSON. Patterned after the Mexican Army, evidently.

Mr. MARVIN. It may look a little that way to you gentlemen, but is immaterial to me what name you give to these men, if the name is the troublesome thing, if you will give men \$1,800 for the foreman of printing, \$1,800 for one of the lithographers, and—

Mr. BYRNES. You see the proposition. You have a chief of the printing division, and then you have a foreman of printing.

Mr. MARVIN. There is no question about the appearance of the thing, but what about the salaries of these men, now, frankly?

Mr. BYRNES. Let us talk frankly about it. I am frank to say that it does not make any favorable impression upon me at all. Let us

the reason why you want it, and if you make a good case for it, I am sure the committee will entertain it, but apparently you will have a chief printer, a printing division, and then a foreman of printers for only a little more, and it would not address itself favorably to the House.

MARVIN. This place has been designated foreman of printing for many years. We want the employee under this arrangement to be \$1,600, and you may adopt any title that seems best. These titles are comparable with those used in the departments generally. It is the same way with the supervising lithographer and the three lithographers. There is an increase of \$400 each for those lithographers.

HARRISON. What you mean to say is that these supervisors have more responsibility than the men in the ranks?

MARVIN. They certainly do.

HARRISON. Can you indicate the responsibilities they have that compositors do not have?

MARVIN. The leading lithographer, for instance, is responsible for the real make-up of the lithographic work.

BYRNES. How many men have you engaged in that work?

MARVIN. There are three lithographers and one supervising lithographer, as you see here, and then there are one or two other men engaged in the grinding of stones and aiding in the preparation of the lithographic work.

BYRNES. But you want to have one man receive a higher salary than the others?

MARVIN. Yes, sir. He is the responsible man for the map work, for all the lithographic maps we prepare. His salary has been \$1,500, and we are asking for an increase. The salaries of the other men are \$1,200, and we are asking for an increase.

BYRNES. The other men?

MARVIN. The three lithographers. There are four lithographers in all.

BYRNES. Now, coming to your printers, how many have you?

MARVIN. In the pressroom we have one foreman of printing, and it is the man we want to have increased from \$1,600 to \$1,800.

BYRNES. Do you know how many printers you have?

MARVIN. There are no increases.

HARRISON. How many men does he supervise?

MARVIN. About 10 men come under this foreman of printing. I have pointed out the different groups of men we have there, of the publication division, the compositors, the pressmen, the foreman of printing, and the lithographers. That work is divided into three branches. An increase is asked for the compositors, and we have used the title of supervising compositor at \$1,800 to indicate that he was the leader of the group of compositors. We ask an increase for the five printers or compositors from \$1,350 to \$1,600, item by item, of course, is simply to have these salaries brought up to a level that will enable us to get good men and to hold them.

ANDERSON. Are those men hand compositors?

MARVIN. Yes, sir; every one.

ANDERSON. What is the scale for hand compositors?

MARVIN. Well, the scale that I have here, the union scale, is for the week. I have the scales here for different cities. This refers to the outside. Under the Government Printing Office scale the compositor comparable to our supervising compositor here gets \$2,300.

Mr. ANDERSON. You say comparable. How is he comparable?

Mr. MARVIN. Well, personally, I do not absolutely know just how he is comparable, but this information is furnished me by the chief of the printing division, who knows the scale at the Government Printing Office, and he knows the difference between what these men are paid at the bureau and what they are paid at the Government Printing Office.

Mr. ANDERSON. You say the scale for hand compositors on the outside is \$33 a week?

Mr. MARVIN. Well, I have here this list of union wage scales in cities where Weather Bureau printers are employed. At Albany, N. Y., it is \$33; at Chicago, Ill., \$50 a week; in New York City, \$45 a week. We have the greatest difficulty in getting men to fill the positions of printer and compositor in the bureau at the present time because of the great disparity between the wages we give them—\$1,080, \$1,200, and \$1,300—and the wages they can get on the outside.

Mr. ANDERSON. You are sure that in that list you have no linotype operators?

Mr. MARVIN. No, sir; these are journeymen printers.

Mr. BYRNES. Have you any linotype machines down there?

Mr. MARVIN. No, sir.

Mr. BYRNES. Why do you not use them? Are they not practicable?

Mr. MARVIN. Here in Washington we have only a very small amount of compositing work, and we are not a regular publishing house. We get out maps and bulletins.

Mr. BYRNES. How many compositors did you say you have there?

Mr. MARVIN. Five printers and compositors and one supervising printer. These are in the Washington office. The other printers that are listed there are on the outside.

Mr. BYRNES. You have there only five?

Mr. MARVIN. Yes; in the central office; that is, here in Washington.

Mr. ANDERSON. Then the men under these items 25 and 26 are employed outside of the city of Washington?

Mr. MARVIN. In the other cities throughout the country where we are printing weather maps and reports.

Mr. ANDERSON. You have a statement here on page 31. In the first place you have promotions as follows: One pressman, from \$1,200 to \$1,600, \$400; 1 printer or compositor, from \$1,440 to \$1,600, \$160; 1 printer or compositor, from \$1,350 to \$1,600, \$250; 20 printers or compositors, from \$1,300 to \$1,500 each, \$4,000. That makes a total of \$4,810.

Now, under new places you have 1 supervising pressman, 1 supervising lithographer, and 1 supervising compositor, each at \$1,800. That is an increase of \$5,400. Then you have 5 printers or compositors at \$1,600 each, \$8,000; 7 printers or compositors at \$1,300 each, \$9,100; 4 press feeders at \$1,000 each, \$4,000. That makes a total increase, according to my figures, of \$39,370.

You drop places as follows: One printer or compositor at \$1,440.

Mr. MARVIN. And we want to include that foreman of printing in there.

Mr. ANDERSON. That is right; one foreman of printing at \$1,600, one lithographer at \$1,500, one printer or compositor at \$1,440, five

printers or compositors at \$1,350 each, \$6,750; six printers or compositors at \$1,080 each, \$6,480; four folders and feeders, at \$720 each, \$2,880. That is a total of \$21,850.

Mr. MARVIN. A net increase of how much?

Mr. ANDERSON. Eighteen thousand five hundred and twenty dollars, or something like that.

Mr. HARRISON. I figure a net increase of \$10,650. Under the head of promotions, there is an increase of \$6,010 and the total of salaries under new places is \$26,500, making a total of \$32,510. Subtracting \$21,850 the total of the places dropped, it leaves an increase of \$10,660. Those are the changes involved in the printing office force.

Mr. ANDERSON. Let us get back to Item 25. You are asking for five new places there. What do you need them for?

Mr. MARVIN. In item 25 two of those are transferred from the lump-fund roll, with an increase of \$160, and five are new places, that is in the place of printers that are dropped below. There is no absolute increase in the number of printers in these items here, but a change in the amount of compensation for the printers and compositors under items 27, 28, and 29. These are printers at the field stations, not in the central office.

Mr. ANDERSON. These are not new places, these five?

Mr. MARVIN. They are new places in the sense that they are places at a higher salary, but they will go to the men that are already employed in the bureau under items 28, 29, and 30, where we are dropping those men. I want to make the point clear that those men are in the field on the lump-fund roll.

Mr. ANDERSON. These five new places in reality, then, are covered by items 28, 29, and 30?

Mr. MARVIN. Two of them are by transfer there.

Mr. ANDERSON. Not the five new places?

Mr. HARRISON. Perhaps it would be clear to you, Mr. Anderson, if we say that all these changes involve no increase in the force. They simply represent a readjustment of the salaries of employees already in the service, with a net increase of \$10,660.

Mr. ANDERSON. How many employees are involved in this whole proposition?

Mr. HARRISON. You mean how many would be promoted?

Mr. ANDERSON. Yes.

Mr. HARRISON. I could not say, off hand.

Mr. ANDERSON. How many of the total number are involved in this readjustment?

Mr. HARRISON. There are 49 employees altogether involved.

Mr. MARVIN. These places that are involved in these promotions are places that are filled at the present time, and the men have had no increases in salary through all these years, and are deserving of increased compensation.

Mr. ANDERSON. Can you not make a statement showing the number of men that are getting \$1,080 each, who are to be increased, and how many are getting \$1,200 that are to be increased?

Mr. MARVIN. I can; yes, sir. It is necessary, Mr. Chairman, to prepare these estimates in this way.

Mr. BYRNES. But if you will just prepare a supplementary statement that you can put into the record, we can understand it.

Mr. HARRISON. That is easy enough to do, and we will be glad to insert it in the record.

Mr. MARVIN. Why not let these all go over until we are through the statutory roll, and make a statement showing just what is contemplated?

Here are the instrument makers up for promotion in order to make their pay comparable with what mechanics are receiving in the navy yard, the Bureau of Standards, and elsewhere in the Government.

Mr. BYRNES. Are you proposing any new men here?

Mr. MARVIN. No, sir.

Mr. BYRNES. But you are proposing increased compensation?

Mr. MARVIN. Increased compensation to the men. We are not increasing the number of men, but increasing the compensation of the men now employed.

Mr. ANDERSON. Well, I do not think I want to pass up this instrument maker matter without a statement to be submitted later on.

Mr. MARVIN. There is one supervising instrument maker there. We had four men in the shop. We have two vacancies there just now, but we have one eligible for one vacancy, and this man for whom the \$200 promotion is provided under the designation of supervising instrument maker is the foreman of the shop, the leader of the shop. Whether you call him the foreman or what you call him, he is the ranking man and a very skilled instrument maker. Our work requires the repair and adjustment of the delicate meteorological and self-recording instruments used in the Weather Bureau Service, and also in the upper-air investigations. He is in charge of the work. He was formerly with one of the leading manufacturers of surveying and transit instruments, and is a very skilled man. We can not hold these men much longer. They have had the hope of reclassification before them, and they are hopeful of an increased compensation, and these adjustments of this statutory roll are submitted to give them a small increase in their compensation at this time.

Mr. ANDERSON. This man, if I remember right, was getting \$1,440 in 1920.

Mr. MARVIN. He was—a small compensation—and he has been promoted, and this is a still further increase to make his salary comparable with what he can get outside. This list here shows me that instrument makers in the Bureau of Standards and throughout the Government service are receiving higher salaries. I have no exact figures as to what they are getting, but our inquiries justify us in requesting these increases. This man is comparable with those in the Coast and Geodetic Survey, when they repair transit instruments, levels, and things of that sort. These men can not be held if we can not make some further adjustment of their salaries.

Mr. BYRNES. What did you say the instrument maker at the Coast and Geodetic Survey, for instance, is now receiving.

Mr. MARVIN. I think they are receiving as high as \$2,400.

Mr. ANDERSON. In item No. 33 you have four instrument makers at \$1,600. That provides for the promotion of how many men?

Mr. MARVIN. There will be four promotions there from \$1,300.

Mr. HARRISON. Three will go from \$1,300.

Mr. MARVIN. Three from \$1,300 and one from \$1,260. In item 34 there is one instrument maker at \$1,440. Items 35, 36, and 37 are to drop the men affected by the changes in items 32 and 33.

Mr. ANDERSON. Instead of having three instrument makers at \$1,300 and one instrument maker at \$1,260—

Mr. HARRISON. You will have four at \$1,600, and no change in the one at \$1,440.

Mr. MARVIN. There is no change in the compensation of the one getting \$1,440, but three at \$1,300, one at \$1,260, and one skilled mechanic at \$1,300 are dropped.

Item 38 provides for increasing a skilled mechanic from \$1,300 to \$1,800. He has been employed in the bureau for 23 years. He has charge of the carpenter shop, and it is proposed to give him general supervision of all the mechanical force, not including the skilled instrument makers, but the other lines of the mechanical force.

Mr. ANDERSON. Do you not think \$500 is quite a jump?

Mr. MARVIN. Well, he is worth it, and the proposed salary is comparable with the salaries of men that are in his class as workmen. It is simply to hold together the organization and enable us to carry on our work efficiently and effectively.

Mr. BYRNES. If he has held on now during the time when his compensation really was small as compared to that of others, do you not believe he is going to stay on without an increase of \$500, when the salary he is receiving will purchase so much more than it did last year?

Mr. MARVIN. Well, I could not answer that question. Of course, he may. If all prices go down, then I suppose the argument for increasing these salaries we have had for years may be weakened.

Mr. BYRNES. I figure that my salary has increased in the last six months by reason of the drop in the prices of things that I purchase. I know that it decreased during the war. I know that I expect to buy more with it during the next six months than I bought during the last six months. I am very much disappointed. You gentlemen are depressing to me.

Mr. HARRISON. But we ought to give a man a fair compensation, regardless of what conditions are.

Mr. BYRNES. The question is what is fair.

Mr. HARRISON. An outside man can command a salary much higher than \$1,800.

Mr. BYRNES. They have been able to.

Mr. HARRISON. They have been able to; yes, sir. What are we proposing does not bring them up to the outside scale by any manner or means. None of these estimates will bring the salaries of the men up to the outside scale.

Mr. BYRNES. That is a question, of course, that I am seeking enlightenment on. I do not know what the outside scale is.

Mr. HARRISON. A skilled instrument maker can make \$2,500 with a large instrument concern any day.

Mr. MARVIN. Here is the solution of this question, gentlemen. We are going to pieces; that is all there is about it. You can view the situation just as you please. I know of the demoralization that exists in the force of the Weather Bureau, but I do not know that

they are now optimistic because of the slight decrease in the cost of things. Their salaries year after year have hardly been increased at all, and in many cases have not been increased; there is an urgent need to do something at the present time to rehabilitate the situation and enable us to perform the work in the way it should be performed.

This roll we are talking about has reference to the statutory, clerical, and mechanical force of the bureau. We have got later to consider the technical and scientific staff. If the answer to all these is that these salaries that have been too low for years must suffice, that is the answer, but if these people deserve increase what can we give them? How much is the committee willing that these salaries should be increased, if at all? If we could approach the matter in a thoroughly businesslike way, I think we ought to be able to agree on what is reasonable and what can be allowed. I should be glad to be permitted to do that. These estimates were made up, of course, before we had any promise of lower prices before they were in evidence, and we are speaking of the situation as it was then, but we want to hold up the integrity of the organization as it is. It is an organization that has grown up, as I explained in my statement, through many years, and these men have been with the service for many years. We are not able to get into the service the kind of men we ought to have now, and we are not going to be able to get them in unless they can see fair prospect coming in. I do not know how we can argue the case more effectively.

Mr. ANDERSON. You are not expecting any reduction in the amount of work which your mechanical force will be required to do by virtue of the provision for centralizing the mechanical force in the Secretary's office?

Mr. MARVIN. Mr. Chairman, I was not aware when these estimates were made up that the other arrangement was in progress, but there is any adjustment between ourselves and the department in regard to that, we are entirely ready to make it, but I understand Mr. Harrison, that the Weather Bureau is so far removed from the department that we are not considered in that scheme?

Mr. HARRISON. The Weather Bureau has not been considered in that scheme, because of its location. It is located at Twenty-fourth and M Streets, and the waste of time and effort in carting material and completed jobs to and from the central shop more than overbalances any extra cost that may be involved in maintaining a shop in the Weather Bureau. The work of the Weather Bureau is now done at the central shop now.

Mr. MARVIN. The instrument work is work that could not be centralized very well, I think.

Mr. ANDERSON. Items 38, 39, 40, and 41 do not involve any increase in the number of personnel?

Mr. MARVIN. No, sir; those are simply changes introduced to increase the compensation of the men who are already employed, and who have had long service in the bureau.

Mr. ANDERSON. Can you furnish a statement along with the other one with reference to these mechanical employess, showing just what the increases are?

Mr. MARVIN. I will be glad to do so, Mr. Chairman. It will be included in the combined statement concerning the statutory roll.

Mr. ANDERSON. Let us go to item 42.

Mr. MARVIN. Item 42 covers the engineer in charge of the heating and power plant, for whom an increase of \$500 is asked. His salary has been ridiculously low for the responsibilities of his position and no increase has been granted him for many years.

Mr. ANDERSON. I have a note here that this man got \$1,300 in 1920. I may be in error about it, but that is my impression. He was increased from \$1,200.

Mr. MARVIN. I stand corrected in that statement that he had no increase. He was increased from \$1,200 to \$1,300. We asked for a larger increase, and I think the committee gave us an increase of \$100, and I had overlooked that in my recollection of the case.

This man has entire charge of the heating plant for the Weather Bureau. You understand that the bureau has its own buildings and grounds, and has its own generating plant for supplying heat and electricity to the institution. The electricity is used for power purposes in the printing section, for running presses and for lighting the buildings. There are two generating plants, because we run night and day. The forecasting work at night comes on at 8 o'clock and runs until 10.30 or 11, when the power is shut down, and we have simply a couple of firemen on during the night. This man is put down for \$1,800.

Item 44, covering four firemen at \$1,080 each, one by transfer from the lump fund with an increase of \$240, and three new places, is like these other items increasing compensation.

Mr. HARRISON. There is an increase of one in the number there.

Mr. MARVIN. There is one new place and an increase in the salaries of those employees.

Mr. ANDERSON. There was considerable history connected with these four firemen, as I recall it.

Mr. MARVIN. The bureau lost a fireman in the Appropriations Committee last year.

Mr. ANDERSON. You should have lost two, but you put one on the lump-sum roll, so that you only lost one.

Mr. MARVIN. Yes, sir. I would just like to read you a letter, Mr. Chairman. We have been unable to operate the plant without the four firemen on duty in pairs during the——

Mr. BYRNES. You have to have two?

Mr. MARVIN. Two firemen on duty at night. One night after the shop had shut down, the one fireman on duty was making an adjustment about one of the vacuum pumps that is connected with the heating system, and his hand was caught between the roller arm and the rocker bar that reverses the steam valve to stop the pump, and he was unable to remove his hand. This was late at night. His hand was badly injured; one of his fingers was badly injured and his hand was burned by the hot pump, and we do not know what would have happened to that man if there had not been another man on duty at the time. It was in March, 1920, that this happened.

Mr. BYRNES. Did it ever happen before in the history of the plant?

Mr. MARVIN. No; I know of no other particular instance.

Mr. BYRNES. You are not going to keep a second man there just to insure the other fireman against getting hurt, are you? Is there not a watchman who goes through there at night?

Mr. MARVIN. The watchman goes through at night, but it is a question what the watchman would have been able to do under the circumstances. But we have had to keep these firemen there as an absolute necessity for the proper management of the equipment.

Mr. BYRNES. You do not have him there simply in case the regular fireman should have his hand locked up like that again?

Mr. MARVIN. Well, any exigency of that sort may happen. It is not a safe proposition to have the plant left entirely with one man.

Item 45 covers the captain of the watch. We call him the chief messenger, with an increase of \$200. There has been a change in the arrangement of the watch force, and this man has many additional duties besides simply those of captain of the watch, so called, because we have a considerable corps of messengers who deliver maps and perform other errands about the city, and this man has charge of that whole service. One thousand two hundred dollars is a very reasonable salary for that responsibility.

Mr. ANDERSON. If \$1,000 was a fair salary when he had additional duties, how do you figure that \$1,200 is reasonable when you take some of them away from him?

Mr. MARVIN. His principal duties are those connected with the messenger service, as such. The duty of watchman at the building does not constitute a large part of his duties, and the man is occupied with responsibilities all the time, and the compensation of \$1,200 is certainly a reasonable one.

Mr. BYRNES. How long has he been with the bureau?

Mr. MARVIN. This particular man has been in the department for quite a number of years, but he was recently transferred to the bureau from the department when we lost another captain of the watch.

Increases are asked for the repairmen and for the whole group of messengers. These repairmen are increased from \$1,000 to \$1,200, and increases are asked in the salaries of the messengers. There are 34 messengers in that group at \$900 each who formerly received \$720, and 22 messengers at \$840, by promotion from \$660. A group of messengers are submitted here for increases, but the same number in the aggregate is retained.

Mr. BYRNES. How many vacancies have you in your force of messengers now?

Mr. MARVIN. I can not answer that, but there are quite a number of vacancies, more or less all the time, and we are making effort to fill them. There are 25 in this group here on duty in Washington. The rest of that whole group of 167 are in the field, distributed at the stations generally; in the large cities like Chicago, there are two. It is almost impossible now to get any boy to take employment at \$480, which is the entrance grade, and this change puts the entrance grade at \$600.

Mr. BYRNES. When you say that, do they get the bonus?

Mr. MARVIN. They do after service; yes, sir.

Mr. BYRNES. They do what?

Mr. MARVIN. They do after they have been in the service.

Mr. BYRNES. How long?

Mr. MARVIN. A month of efficient service.

YRNES. So, it is not getting them to enter at \$480, except month?

ARVIN. We speak of this as the basic salary, \$480. They ed to the bonus on performance of efficient service and cer- by the secretary, but with or without the bonus we can not

YRNES. You can not get boys in for \$720?

ARVIN. At \$720; yes, sir.

ANDERSON. This rearrangement does not involve any increase se in the number of employees?

ARVIN. No, sir; there is the same number of employees ut.

ANDERSON. Were there any persons on your statutory roll e paid from the lump-sum appropriation, either in this r others?

ARVIN. No, sir; we provide for transfers to the statutory ery person that should properly go there, that is now on the n roll, one printer; there are no clerical places to transfer.

no employees on the statutory or lump-sum roll that are to any other branch of the Government.

Promotions in statutory roll of Weather Bureau included in estimates of appropriations for fiscal year 1922.

Book of Estimates reference No.	Number in grades affected.	Titles of positions.	Proposed salary per annum.	Salary increase per annum.	Total of promotions.	Resulting line promotions to vacancies.	Remarks.
1	1	Chief of bureau.....	\$7,500	\$2,500	\$2,500	.....
2	1	Assistant chief of bureau.....	4,000	750	750	.....
3	1	Chief clerk.....	3,000	500	500	.....
6	3	Chiefs of division.....	2,600	500 each.	1,500	.....
	4	Executive clerks.....	2,000	200 each.	800	.....
7	4	Clerks, class 4.....	1,800	200 each.	800	.....
	4	Clerks, class 3.....	1,600	200 each.	800	.....
	4	Clerks, class 2.....	1,400	200 each.	800	.....
	4	Clerks, class 1.....	1,200	200 each.	800	.....
9	2	Clerks, class 3.....	1,600	200 each.	400	.....
	2	Clerks, class 2.....	1,400	200 each.	400	.....
10	2	Clerks, class 1.....	1,200	200 each.	400	.....
11	2	Clerks, class 1.....	1,200	200 each.	400	.....
17	4	Clerks, class 1.....	1,200	200 each.	800	.....
	1	Supervising pressman.....	200	200	200	.....
19	1	Supervising lithographer.....	1,900	300	300	.....	In charge of press room; performs actual service as pressman and supervises 1 pressman, 4 press feeders, and 2 laborers.
20	3	Lithographers.....	1,000	400 each.	1,200	.....	In charge lithographic work; performs actual duties of lithographer and supervises work of 3 lithographers and 1 litho-stone finisher
21	1	Pressman.....	1,000	400	400	.....
23	1	Supervising compositor.....	1,800	300	300	.....	In charge composing room; performs actual duties of compositor and supervises work of 6 compositors.
25	7	Printers or compositors.....	1,600	{ 5 at 250 1 at 150	1,500	.....	{ Of a total of 34 printers or compositors, 7 are employed in Washington and 27 at field stations.
26	20	.....do.....	1,500	200 each.	4,000	.....
27	7	.....do.....	1,300	{ 6 at 220 each. 1 at 100	1,320	.....
31	4	Press feeders.....	1,000	200 each.	1,120	.....
32	1	Supervising instrument maker.....	1,800	180	180	.....	In charge of machine shop; performs actual service as instrument maker and supervises work of 5 instrument makers.
33	4	Instrument makers.....	1,600	{ 3 at 300 each. 1 at 160	900	.....
	1	.....do.....	1,440	160	160	.....
34	1	Supervising mechanic.....	1,800	500	500	.....	In charge of mechanical shop; performs actual service as carpenter and cabinet maker and will have supervision of 6 skilled mechanics, including carpenters, painters, etc.
39	3	Skilled mechanics.....	1,400	200 each.	600	.....

50	1	1	1,200	240 each.	960	
53	34	34	1,200	200	200	
55	22	22	1,200	200 each.	400	
56	11	11	1,200	200	200	
57	100	100	900	200	200	
				28 at 180	5,040	
				6 at 240	1,440	
				240	5,280	
				120	1,320	
				120	12,000	

{ Of a total of 167 messengers, messenger boys, and laborers, 25 are employed in Washington and 142 at field stations.

Pro notion vacancies may be filled by promotions or new appointees, as exigencies may require .

Number of promotions provided in estimates.....	249
Employees in Washington.....	76
Employees at field stations.....	173
Amount to be used for pro notions.....	\$48,180.00
Average amount of pro notions (not including 6 administrative officers).....	172.81

GENERAL EXPENSES—DISTRICT OF COLUMBIA.

Mr. ANDERSON. Item 64 is the next item on page 33.

Mr. MARVIN. Mr. Chairman, that is the item that covers the general expenses in the city of Washington outside of the statutory roll which we had this morning. There is an increase asked for here of \$18,500, a net increase, which is to be used in four different projects: \$5,500 for salaries, \$6,000 for improving the forecast and warning service, of the bureau, \$6,000 for supplies, instruments, and telegraphic expenses in connection with the harvest forecast service—

EXPENSES INCIDENTAL TO THE PROPOSED EXTENSION OF THE VESSEL AND WEATHER SERVICE.

SALARIES, TELEGRAPHING, AND MISCELLANEOUS.

Mr. ANDERSON. You seem to have that mixed up. You have \$5,500 for salaries, telegraphing, and miscellaneous expenses, and then you have \$6,000 for supplies, instruments, and telegraphic expenses. What are these two items?

Mr. MARVIN. The telegraphic expenses are incident to different kinds of service there, and stated in each case where there are expenses of that kind. This vessel weather service covers the reports we get—

Mr. ANDERSON. Let us take up (a) first, and then take up (b).

Mr. MARVIN. That is the vessel weather service I am speaking about. That is the service from ships at sea equipped with wireless which can report to shore stations the weather conditions at sea. We pay these men a certain amount for observations, 50 cents per observation. And then the telegraphing that is mentioned there covers the radio and land-line tolls for getting the reports in. We wish to extend that to the Pacific coast district, and there are some incidental expenses here, in Washington, a part of the administration, etc., that are included. I have an item here that covers the employment of three new men and six promotions of \$240 each.

Mr. ANDERSON. Three new men at what salary?

Mr. MARVIN. \$1,440 and \$1,620, and six promotions of \$240. There seems to be a discrepancy there.

Mr. ANDERSON. Six promotions of \$240?

Mr. MARVIN. Yes, sir. That covers additional work that is included in that item. The three new men have additional weather reporting service. Two only of those three new men are for the vessel weather reporting service.

Mr. ANDERSON. How much of that \$5,500 is for telegraphing?

IMPROVEMENT OF THE FORECAST AND WARNING SERVICE.

Mr. MARVIN. \$4,000. Item (b), \$6,000 for improving the forecast and warning service of the bureau, has reference to the entire work of the preparation of forecasts in the city of Washington. We have had great difficulty in recent years in securing suitable men for the preparation of weather maps that are used in the forecasting work. The telegraphic reports are received at the bureau in cipher and are

decoded orally by a translator. Several map men enter the weather conditions carried in the reports on maps. This work requires trained men familiar with the station work of the bureau and meteorological observations and reports, and they must be on duty both in the morning, from 8.30 a. m. up to noon, and in the evening from 8.30 o'clock on until 10 or 11. The two-shift duty is a disagreeable task for most of these men. We have had several resignations from that force, and it has been difficult to recruit it and maintain it, and we want some additional men in that force, and at somewhat higher compensation. The rate of pay has been \$1,200, and we now want to increase them from \$1,200 and \$1,400 up to \$2,400 for those in a supervisory capacity. The \$6,000 there covers the entire increase for that item of work.

SUPPLIES, INSTRUMENTS, AND TELEGRAPHIC EXPENSES.

Item (c), \$6,000 for supplies, instruments, and telegraphic expenses, is to cover the additional cost of supplies. That does not require any particular comment. We have to pay more for everything we get over what we formerly paid, and we are asking here for a small increase. You will notice that this fund has not been increased for many years, as shown by the table above. It has been 109,250 ever since 1917, and this increase is for costs that must be paid out of that fund. About \$1,000 of the increase will be needed to meet the advance of rates for radio communications which have been announced effective July 1, 1921; that is for tolls that are not specifically included in the item of vessel weather reporting service but for various observations for general forecasting purposes.

TELEGRAPHIC AND MISCELLANEOUS EXPENSES.

Finally item (d), for telegraphing and miscellaneous expenses in connection with the new harvest forecast service. We have been requested to get information more directly to the farmers in rural communities, through the farm bureau organizations. We have always experienced difficulty in making our forecast information immediately available to the farmers. We have resorted to all sorts of means to get into communication with the farmer promptly, through the rural free delivery and other agencies, but the service is not what it should be at the present time. This proposal is to put in a telegraphic service to certain farm bureaus in one State, to see if the farm bureau organization can not disseminate the information by telephone to the farmers where it will be useful to them. The predictions to the farmers will be chiefly of rain and weather conditions that affect harvesting and operations of that kind during that season of the year, and will go immediately to the agricultural communities. The amount asked for there is very small—\$1,000.

INCREASES IN SALARY AND FORCE.

Mr. ANDERSON. This note does not seem to exactly correspond with the statement at the bottom of it. You have \$5,500. How many men are employed under that? How many new men does that involve?

Mr. MARVIN. The total increased expenditure for salaries under this item aggregates \$8,500.

Mr. ANDERSON. That is increases alone?

Mr. MARVIN. For new men and for increased salaries. The details are not given here, but the amount expended out of this increase that is asked for salaries is to be \$8,500. The aggregate for telegraphing for the whole item 64 is \$4,000; for miscellaneous supplies, etc., \$6,000, aggregating \$18,500.

Mr. HARRISON. The table gives the number of men, Mr. Anderson.

Mr. ANDERSON. Two additional men. Dr. Marvin said a moment ago that there were to be three new men at \$1,440 each. These promotions at \$240 certainly do not correspond with the table down here.

Mr. MARVIN. I have a pencil note on this memorandum that the chief of the forecast division has given me: One new place at \$1,620, three new places at \$1,440, and four promotions of \$240; each are contemplated in connection with the map force and two new places for the vessel weather service, one at \$1,440 and the other at \$1,260, making six new places in all. These do not show in the table because the latter represents the entire central office force on the miscellaneous roll after contemplated promotions and adjustments are made.

Mr. ANDERSON. According to your table here, you are promoting one man from \$3,960 to \$4,500.

Mr. MARVIN. That, Mr. Chairman, is a contemplated promotion. That is apart from the specific item here, the activities for which increases are asked, to recognize the services of our leading forecaster of the country. This man is now receiving \$3,960, and I have put in this increase to \$4,500 as being deserved by that man. The Weather Bureau has not in its organization up to the present time a single employee receiving in excess of \$3,960. There have been a number of promotions in the department to positions carried in the department at \$4,500. We have never had the funds to permit us to promote anybody to those salaries under this miscellaneous roll, but this man and others are deserving of just as much compensation as any man in the department. This man will be the most difficult man to replace possible. He is a highly trained forecaster. It is an art that requires years of study and experience, and the one position put down there at that salary is for this man I speak of. I can prepare for you, Mr. Chairman, a detailed statement in connection with the others that are to be furnished, and the exact manner in which these changes in compensation and additions of men are to be effected. In this case there is the necessity for additional men as well as some increase in compensation in the map force.

Mr. ANDERSON. Your only additions of men here are two men at \$1,640 at the bottom of the list?

Mr. MARVIN. No. The additions will be about five.

Mr. ANDERSON. The rest of it is all promotions?

Mr. MARVIN. It is the five men and the promotions in the map force that make this amount I have here, \$8,500.

Mr. BYRNES. The total shows at the bottom, 27 men estimated for as against 25.

Mr. MARVIN. Yes, sir.

Mr. BYRNES. These are the only two additions?

Mr. MARVIN. The promotion of map men in addition to the five new places covers the amount of \$8,500 for salaries, there is \$4,000 for

telegraphing, and \$6,000 for supplies, equipment, and miscellaneous expenses, making a total of \$18,500, which is the increase asked for. That is the fund for the administration of the technical work in Washington of forecasting and the map issuing operations.

Promotions in Washington effected on the miscellaneous roll from July 1, 1920, to Dec. 20, 1920.

Title.	Salary grade.		Number of employees.	Apparent increase.		Remarks.
	From.	To.		Individual.	Total.	
Chief clerk to meteorologist.	\$2,500	\$3,250	1	\$750	\$750	Promoted from chief clerk, statutory roll, to meteorologist, miscellaneous roll, with change of duties, to fill a vacancy at the same salary. Apparent increase of \$750, but actual increase of \$310 because of loss of bonus.
Meteorologist.....	2,880	3,240	1	360	360	Apparent increase of \$240, but actual increase of \$220 because of loss of portion of bonus.
Do.....	2,280	2,520	1	240	240	
Do.....	2,160	2,520	1	360	360	
Do.....	1,620	2,040	1	420	420	Apparent increase of \$360, but actual increase of \$340 because of loss of portion of bonus.
Observer to meteorologist.	1,440	1,620	1	180	180	
Total			6		2,310	

Average of actual salary increase to individual, loss of bonus considered \$338.33
 Average apparent salary increase 365.00
 Note.—This table does not include two increases in salary amounting to \$540 charged to the appropriation for "observing, measuring, and investigating atmospheric phenomena."

Statement showing present and proposed salary expenditures.

Title.	Salary rate per annum.	Salary roll Dec. 20, 1920.		Salary roll estimated for fiscal year 1922.	
		Number of employees.	Total salary.	Number of employees.	Total salary.
Meteorologist.....	\$4,500	1	\$4,500	1	\$4,500
Do.....	3,960	3	11,880	3	11,880
Do.....	3,500	2	7,000	2	7,000
Do.....	3,250	1	3,250	1	3,250
Do.....	3,240	1	3,240	2	6,480
Do.....	2,520	3	7,560	3	7,560
Do.....	2,040	2	4,080	3	6,120
Do.....	1,800	1	1,800	2	3,600
Do.....	1,620	3	4,860	3	4,860
Observer.....	1,440	2	2,880	4	5,760
Do.....	1,260	1	1,260	2	2,520
Assistant observer.....	1,080	1	1,080		
Fireman.....	840	1	840		
Total commissioned employees.....		23	\$4,770	27	\$63,270
Noncommissioned employees: Storm-warning display man.....	120	1	120	1	120
Total		24	\$4,890	28	\$63,390

This place is carried temporarily on the miscellaneous roll and is to be transferred to the statutory roll.
 NOTE.—The present salary expenditure is \$54,890, to which \$8,500 is added to cover new places as provided in the estimates, making a total of \$63,390. This is the approximate amount that will be spent for salaries. Promotions will be made as indicated in the various salary rates only as it may be permissible to do so by reason of resignations and rearrangements on the roll.

MAINTENANCE OF PRINTING OFFICE, WASHINGTON, D. C. ,

Item 65 is the appropriation for the maintenance of the print office, an increase from \$12,800 to \$14,450, an apparent increase \$1,650, but an actual increase of \$3,000. That is to cover entirely the cost of printing supplies, inks, papers, and incidental costs connected with the maintenance of the printing office which is paid out of this fund, the printing work in Washington of issuing weather maps and bulletins such as you see about the city.

NECESSARY EXPENSES OUTSIDE THE CITY OF WASHINGTON.

Item 66 is the big item for the out of Washington expenses, the collection and dissemination of meteorological, climatological and marine information, etc., an increase to \$1,398,610. That is a net increase of \$98,500, to be used in several different lines of work.

CHANGE OF LANGUAGE.

There is a change submitted in the language, omitting the limitation of sums, which does not affect the appropriation, but to a certain extent hampers the administration and management of the fund. There is no other appropriation in the department, or, as far as I know, in the Government, that quite corresponds to that, where there are to exceed limitations are set up on the amount that can be expended for different activities. The appropriation carries a large sum, and these limitations require administrative adjustments, through the approval of the Secretary each year, to take care of the excesses and not to exceed amounts. The committee has, of course, approved the amount of the whole appropriation, and it seems unnecessary to retain that limiting language in there, and as submitted here, I proposed to have the limiting language omitted.

Mr. ANDERSON. The object, evidently, of putting the limitation of \$700,000 in the appropriation was to limit your salaries, I suppose. If we take that limitation out, there is not any limit.

Mr. MARVIN. Yes; there is, Mr. Chairman. We are compelled to conduct our activities. You gave me last year \$1,303,030. I cannot use all of my money for salaries. I must conduct my other activities, pay my telephone tolls, and my rent of buildings and of land in the cities.

Mr. BYRNES. How long has this limitation been carried in the bill?

Mr. MARVIN. Ever since 1914. The form of the appropriation was then changed, and the limitation was put in at that time.

Mr. BYRNES. Has it handicapped you?

Mr. MARVIN. Yes, sir; it has in several particulars, and it does not serve any particularly useful purpose, as far as we can see. If you are willing to let me have \$1,300,000 for these expenses, I see no reason why I should not be trusted to administer those funds efficiently and justly.

SPECIAL OBSERVATIONS AND REPORTS.

Mr. BYRNES. Let me ask you in regard to this item for \$129,000. Is that for special observation and report, or is it paid to employ people for salaries?

Mr. MARVIN. No, sir; all of that goes——

Mr. BYRNES (interposing). Who is that paid to?

Mr. MARVIN. That is paid to these river observers who report the rain falls and gauge the rivers, cotton region, corn and wheat region, and other special observers, storm-warning display men, etc.; they are given \$10 per month, and small sums of that sort. It goes into their compensation in that way.

Mr. BYRNES. Can you spend all of that amount?

Mr. MARVIN. No, sir; not to exceed that amount.

Mr. BYRNES. Will you explain the increase of \$98,000?

EXTENSION OF VESSEL WEATHER SERVICE.

Mr. MARVIN. The first part of that is to be devoted to this extension of the vessel service which I have mentioned before. The other part is in Washington. This part is for the extension which takes place in the field.

Now, on the Pacific coast, especially, the general movement of storms is from the ocean inland. In fact, over the whole United States the storm movement is from the west toward the east.

On the Pacific coast the storm is on them almost before they get their observations, but now that vessels are equipped with wireless and can make observations and report at sea, we are extending that service to the Pacific coast, and are asking \$9,500 for this extension. It will be used for the payment of these radio messages and also for the payment of compensation of reporters.

TELEPHONING AND TELEGRAPHING.

Mr. ANDERSON. Now, you have got an item for telegrams of \$5,500 in the preceding item for these vessel weather reports, and now you tell us here you are asking for \$9,500 to be spent here.

Mr. MARVIN. We have a distinct line of expenditures in and out of Washington and divide the expenditures between the two.

Mr. HARRISON. Mr. Chairman, the telegrams from Washington to the field are paid from these funds, but the telegrams from the field to Washington are paid out of the field appropriation.

Mr. ANDERSON. You do not have any telegrams to pay for in this service from the reports?

Mr. MARVIN. No, sir.

Mr. ANDERSON. Then something must be wrong somewhere.

Mr. MARVIN. Mr. Chairman——

Mr. HARRISON (interposing). The information has to come in to some central office. One of these items covers the expenditures in Washington and the other covers the expenses outside of Washington—One covers the cost of telegrams coming from the field to Washington and the other covers the cost of telegrams from Washington to the field.

Mr. ANDERSON. Well, there is no expense connected with the telegraphing of this information to Washington, for this particular item, this telegraph service?

Mr. HARRISON. The reports, as I understand it, come in to Washington.

Mr. MARVIN. But they come both to Washington and San Francisco, Mr. Chairman. The telegrams coming from the field station are paid for out of this fund. The telegrams out of Washington to the field must be paid for—the telegrams which go from Washington to the field must be paid for—from Washington funds. The mentioning of the telegrams here is simply meant to show that they are expenses of that nature and that they must be met. The major fund is for telegrams. As you can see here, \$295,700 is for communication and observations from the field stations. That covers nearly all of the appropriation we have for telegraphing, and embraces reports from 200 and more stations that are sent from outlying points and from the large number of special meteorologic stations and for the distribution of forecasts, warnings, and weather information.

The vessel reports that we get from the Pacific Ocean, especially the increases that are going to be made on the Pacific coast, will improve conditions and give us information as to the storms that ex over the ocean before they get to the land. If we can get the observations from the steamers before the storms get to land, there can be that much previous warning. The telegraphing and the payment of the observers is a field charge against this fund. The additional amount estimated for is \$9,500.

ISSUE OF WEATHER MAPS.

Item (b), \$20,000 for the resumption of weather map, if you have no further questions there.

Mr. ANDERSON. All right; go ahead.

Mr. MARVIN. During the war, due to the loss of trained men and other difficulties, we curtailed the issue of weather maps at the field stations in a number of cases. This is for the resumption of weather maps. It is desired to employ additional men at a number of stations in order that the publication of weather maps and preparation of glass maps on a number of the important exchanges in large cities may be resumed. This is one of the most effective methods of disseminating weather information. The present personnel at many of the stations, however, is inadequate to undertake the work of issuing maps.

At a number of places those men were put off and we were not able to prepare those glass maps which we had before kept at boards of trade and chambers of commerce and such places. That work has been suspended ever since. The chief necessity for that was the loss of men who entered the military service, and we were unable to keep up the work. We now want to have a small increase here of \$20,000 for the resumption of this map work, which calls for increased personnel at a number of stations. This is, as I said, one of the most effective methods of disseminating weather information we have, and the present personnel of the service is inadequate. We require an increase for the purpose of rehabilitating the work along these lines.

EXTENSION OF THE FRUIT-FROST SERVICE.

The next is item (c), \$9,000 for the extension of the fruit-frost service. As the value of the fruit crop has increased, its protection from frost by heating has become more extensively practiced, and

the demands on the Weather Bureau for frost forecasts and specialized advice exceed its ability to meet them under present appropriations. That work has been conducted for a great many years and consists of the issuing of warnings of frosts to the citrus and deciduous fruit districts in the frost season in Florida and southern California during the winter season and later in the spring in the northern districts and throughout the country generally.

The service consists of giving warnings of frost and very definite and specific information to orchardists where they have means of protecting their orchards from frost by means of fires and artificial heating of the orchards. We need trained men to do effective work.

Mr. ANDERSON. How much have you expended on fruit frost service; how much are you expending now?

Mr. MARVIN. Well, I can not say as to the exact amount that is spent each year, but it is included in the general work of forecasting. It is difficult to keep an itemized account of the separate expenditures of that character because there is so much involved in it.

The fruit frost work is made up of observations on which they base their forecast work at the district centers and telegraph it to the sections in which the service is performed.

Mr. ANDERSON. Well, how is the \$9,000 expended? That is what I want to know.

Mr. MARVIN. A part of it will be used in telegraphing. It is proposed to add two men at \$1,800, one at \$1,400, and to use \$500 for telegraphic expenses, and \$3,500 for miscellaneous expenses, including instrumental equipment, etc.

Mr. ANDERSON. Well, since you are going into that can you give us some information with regard to (b)?

Mr. MARVIN. I do not have the exact information for (b) here. It is intended for additional employees at field stations to enable us to resume weather maps.

SPECIAL FORECASTS IN CONNECTION WITH ORCHARD SPRAYING OPERATIONS.

Mr. ANDERSON. All right, go on with (d).

Mr. MARVIN. This is in connection with the service for orchard spraying that has been very effective heretofore in western New York, and it is requested that it be done elsewhere. The service consists in the special forecasting of rains three or four days in advance where possible in order that the orchardists may prepare to spray the trees at the critical time in order that the rain shall come just after the spraying of the orchards has been completed. That makes the spraying much more effective.

Now, the ordinary forecasts, which are sent from 24 and 36 hours in advance are not quite adequate to make the service effective. We want to give service longer in advance, and send the men into the field to get the information to these districts when the spraying operations are necessary. This work is conducted in connection with the organizations that handle the spraying part of it, from the orchardists' viewpoint. We give them advice and information as to rains and they organize the program with regard to their spraying operations in order to make them most effective.

The salary items that are included is one man at \$1,800, two at \$1,620, and four at \$1,440; telegraphing expenses, \$500, and incidental equipment, \$1,000.

EXTENSION OF CATTLE, CORN, AND WHEAT REGION SERVICE.

The next item (e) \$4,000 for extension of cattle, corn, and wheat region service. This is for extension of the cattle region and wheat region service. We want to extend that character of work. The work comprises the collection of observations and reports from the different regions of the corn and wheat belt. The expense is for the collection of information as to the rainfall, and the temperature conditions each day, and telegraphic reports in certain corn and wheat sections not now occupied.

In the case of the cattle-region service, the same reports are utilized in furnishing bulletins for the cattle interests as to the grazing conditions of the ranges, and the work also includes the issuing and the dissemination of—

Mr. ANDERSON. I do not get what this information is as to what it is for?

Mr. MARVIN. Well, it is advices as to the effect of the weather on grazing conditions. We do not, of course, make observations of grazing conditions of the ranges, and the work also includes the over the cattle ranges. The observations are collected to report the condition over those districts.

This cattle-region service also includes sending warning of cold waves and heavy snows. That is of special importance during the critical season of the year to the cattlemen, to protect their stock and get them under shelter when necessary. We warn them as long in advance as possible, and they use protective measures so far as their stocks are concerned, and it saves them from great losses.

Every one of these services, gentlemen, means economical benefit to the country. It is a great service.

Mr. BYRNES. You are rendering that service now?

Mr. MARVIN. We do now, as far as we can. This is to meet the demands for more service, and to put the service in additional regions in the case of the cattle-region work. It has been done in Arizona, and in the southwestern States. We want to go up into Montana and the northern districts.

HARVEST FORECASTS.

I noted a moment ago about the harvest forecasts where the purpose was to furnish these forecasts to the farm bureau organizations for dissemination to the farmers. There is no question but what very much benefit could accrue to the farming communities if they would, and could avail themselves of the use of our weather-forecasting work. But, it is often almost impossible to get the information to them early enough unless we could telegraph out to each individual farmer, which is, of course, impossible. Farm bureau and other organizations that have come into existence during recent years furnish means by which we can reach these people now, but we can not reach them where they do not have organizations.

Mr. ANDERSON. Now, just take the different localities. You have got county agents in every county in the United States and I suppose in every one of those localities where there are county agents located they get the weather forecasts.

Mr. MARVIN. Well, I do not know whether each county agent gets the weather forecast or not. All of those located in the big cities get forecasts.

Mr. ANDERSON. Well, they get them in every town in the United States. You see them stuck up at the post offices everywhere you go all over the country. The county agent and the post office can get them just as well as anybody else?

Mr. MARVIN. Well, we make an extensive distribution of them. There is no question about that. Our forecasts are sent out through the rural free deliveries and we telegraph the forecasts to the postmasters, and they stamp them on a card, which you see, and they make them available. At the same time lots of people do not get the forecasts immediately.

Mr. ANDERSON. That is very true, but what I am trying to find out is what you are going to do with this \$2,000?

Mr. MARVIN. Well, this is for——

Mr. ANDERSON (interposing). Is it going to enable you to get earlier forecasts to the regions, and to more people, or what?

Mr. MARVIN. As I say, that is exactly the idea, to enable us to get earlier forecasts into the hands of the farmers, to deliver them to the farmers. It means more telegraphic expenses chiefly.

Mr. BYRNES. You propose to telegraph them?

Mr. MARVIN. Either to the farm bureaus or to the county agents. We rely on some of the central agencies to receive the forecasts and to distribute them. Now, we telegraph the forecasts to the postmaster, and he agrees to stamp the forecast on these cards and to distribute them or post them. But, at the best, this distribution does not immediately reach the distant farmer. Now, the farm bureau organizations receive——

Mr. BYRNES (interposing). Are these organizations in the Department of Agriculture?

Mr. MARVIN. No; the farm bureaus in the different States and the counties——

Mr. BYRNES (interposing). Do you mean that you intend to telegraph to the organizations in the States—the central organizations—then telegraph to all of the county agencies?

Mr. MARVIN. No, sir; not in all the States as yet. This is a service that is being inaugurated in a very limited way in one State. It is proposed to be done in one State, and we will telegraph them the weather conditions from day to day, and they are to see to it that the forecast is distributed to the farmers. The proposition at the present time carries telegraphic expenses mentioned, that is not in Washington, \$1,000. We are going to have one man, at \$1,400, put on the job.

Mr. BYRNES. What are you going to give him to do?

Mr. MARVIN. Well, he will take charge of this work in that State and see that it is properly handled by the farm-bureau organizations.

Mr. ANDERSON. What you are going to do then, is to send a man out to the farm bureau associations and send the information to him and have him take charge of the work?

Mr. MARVIN. To take up the work with them and to introduce it. See that it is properly introduced, and it will go through his hands to the agricultural community.

Mr. BYRNES. If the organization is going to take charge of it, I do not see what he is going to do.

Mr. MARVIN. Well, it is necessary to have the work in the hands of some responsible person, some responsible weather bureau man to take care of it.

Mr. BYRNES. Why, if it is simply a question of disseminating information, and if you expect the agricultural colleges, for instance, to cooperate with you to take charge of this work and to cooperate with you and distribute that information, they are going to have somebody do that work and they will have somebody designated. If they are not going to do that, are you going to send a man down there or are you going to cooperate with them and simply send a telegram to your agent and have him turn it over to them to distribute?

Mr. MARVIN. That is possibly the way it will work out ultimately, when we get the matter into thorough-going shape, but we feel that we should have an employee for this purpose in order to make the work effective and efficient, and one man at \$1,400 is all that is asked for. The rest of the money is for incidental expenses of telegraphing and telephoning.

Mr. ANDERSON. I can see that it might be of some value in disseminating this information through the communities to the farmers, through some central agency, but it will have to be—the forecast will have to be—forecasted longer than 24 hours to be of much value to the farmers, it seems to me.

Mr. MARVIN. We would not expect to use the ordinary forecast which runs—the morning forecast runs for 36 hours; this morning's forecast ends 36 hours hence; beginning to-night, it runs through 24 hours.

Now, in these spraying operations it is necessary to have it still longer, to have a longer forecast. That would be one of the objects in having a man on this work to be able to answer inquiries and give interpretations as to the forecasts for certain regions. Wherever we render the service in any city, our men are always on the phone, frequently being called to answer particularity with regard to the forecasts. It does not end with simply giving the forecast. They call up and want to know how about this, that and the other. We need men who have that work in hand to make a success of it.

Mr. ANDERSON. All right, we will go on with the next item.

EXTENSION OF RIVER AND FLOOD WORK.

Mr. MARVIN. The next item (g) \$9,000 for the extension of river and flood work.

Before the war we had a man who was rated as an engineer. We were able to get him then for about \$1,200, but he resigned and went into the military service at a much higher compensation as an engineer, and has never come back. We want an additional man under that item at \$2,000, a man with engineering experience and ability. We have thousands, I think, or many hundreds of river gauges in the United States and many of those get washed out and the zero point of the gauge gets changed as a result of the flood conditions, and it is continually necessary to have some one go around and

get the river-gauge zero properly set, so that we can correlate reports properly with the past and future flood conditions. We are asking for that one position in this item.

Now, the telegraphing in connection with flood conditions is simply reporting the river stages, the rainfall in the districts and that amounts in this estimate to \$5,900. That covers both telegraphing and pay for the men who make these observations—50 cents per observation generally.

Mr. BYRNES. You are now doing this work, are you not?

Mr. MARVIN. This is an extension of the work. It is for additional work.

Mr. ANDERSON. In addition to the rivers you are now covering?

Mr. MARVIN. Yes, sir; it is additional gauges, and covers points that have not been reported that are needed to be covered on places on tributaries or something of that sort that is not properly covered at the present time. This is for the betterment and rehabilitation of the work to meet the demands of the present time.

RENTS, REPAIRS TO BUILDINGS, MATERIALS. SUPPLIES, ETC.

Now, the next item (h) is for materials and supplies. We have, of course, had to pay much more for instruments, equipments, and materials, and we tided over in the past with no special increase for this purpose.

We have suffered a great many increases in rent charges in outside city stations wherever we have had to renew leases, they have generally been at an increased amount of rental.

Mr. ANDERSON. Most of the stations are located in Federal buildings, are they not?

Mr. MARVIN. No, sir; quite a number of the stations are not located in Federal buildings. We have some buildings that are owned by the Government, as you know.

This table of rentals shows we have a total floor space of 74,338 feet, for which we pay \$92,329. Thus, the average rental per square foot for office room is \$1.09.

Now, we are asking for \$15,000 to cover increased cost of supplies and equipment; \$5,000 for increased rent; \$8,000 for necessary repairs to buildings; \$8,000 for instruments; and \$2,000 for freight and express charges due to increased rates.

That is what goes to make up item (h).

If there are any questions you would like to ask about the rental situation, I think perhaps I can give it to you here.

Mr. ANDERSON. I want to ask a question with regard to this general item, what increased promotions have been made under this item since July 1.

Mr. MARVIN. In this item for the past year?

Mr. ANDERSON. Yes, sir.

Mr. MARVIN. Well, as I mentioned a moment ago, we had or we were authorized to spend an additional amount of \$27,500 for salary. That amount has practically now been obligated under the present appropriation and the compensation of the men has been increased accordingly. It has been spread out very evenly and equitably amongst the deserving men of the service, some four hundred and

seventy men. The number of men is pretty nearly the same as it has been for some years.

Mr. ANDERSON. Isn't it less?

Mr. MARVIN. There is a small reduction, I think, this year as a result of the retirement and reductions that took place following 1918. We did make considerable reductions in the force after the war to offset increases that were made during the war, where we lost a large number to the military service and took on a considerable number of untrained men whom we were compelled to use; and the latter part of July or June of 1918, I think it was, there were about 17 men dropped, and there have been some further reductions since then. I do not have any figures with me to show the exact reduction in the number of men, but I can furnish that statement if it is desired. I can assure you that the number of men has been held down to the minimum.

NUMBER OF PROMOTIONS.

Mr. ANDERSON. Well, there have been over 200 promotions since July 1.

Mr. MARVIN. I think we have had fully 200 promotions out of this fund and then there has been a number as the result of resignation and retirement, etc. Those promotions have been, the majority of them, comparatively small—\$120 to \$180, as my recollection is.

Mr. ANDERSON. Some of them have been increased a great deal more than that.

Mr. MARVIN. A few of the higher grades.

Mr. ANDERSON. Some as high as \$700. Here is one for \$750.

Mr. MARVIN. I do not know exactly to what you refer. I would not question it. What was it, may I ask?

Mr. ANDERSON. Here is a case of Edgar B. Calvert, promoted to meteorologist at \$3,250 from chief clerk at \$2,500.

Mr. MARVIN. The promotion is practically \$750, but you must recognize that the bonus was received for the \$2,500, but was not received with the \$3,250.

That promotion was an entirely deserving one as a result of the retirement of the chief in charge of the forecast division, who was beyond the retirement age and who took retirement, and Mr. Calvert was placed in charge of the forecasting division to fill the vacancy.

Mr. HARRISON. Mr. Williams was getting \$3,250, and Mr. Calvert was promoted to that grade.

Mr. MARVIN. The change in the amount there was justified entirely because there was no position created for the man, but it came about automatically with the retirement of one man and the selection of a competent and capable man for the position.

Mr. ANDERSON. Here is another case: Mr. Weightman was promoted to chief clerk—promoted from meteorologist at \$1,800 to chief clerk at \$2,500, which was a promotion of \$700.

Mr. HARRISON. That is a statutory place, Mr. Anderson, carrying a salary of \$2,500.

Mr. MARVIN. That was the result of Mr. Calvert having been made chief of the forecast division.

Now, we have a condition there in which we have one of the most important activities, the forecasting division—there is not any part

of the bureau in which any more important work is done than in that office. The officer in charge had been receiving compensation at \$3,250 for many years and he retired, so what were we to do with the position? Well, in the first place, there was practically no question about the selection of Mr. Calvert for the position of chief of the forecasting division. He was decidedly the best man we had in the service for that position.

Now, the chief clerk's position was also to be filled, and it was a question, and we were looking around for awhile before we finally selected Mr. Weightman. Mr. Weightman had been in the chief clerk's office and had been receiving a salary of \$1,600 some time before. He took military service and went over to France and remained over there for 12 months or more, I think. I do not know how long he was over there, but I think it was 12 months. He came back from France and was placed in the forecasting division at a salary of \$1,800. When this vacancy in the chief clerk's position occurred we cast about for the most capable man for that position and selected Mr. Weightman. That involved his promotion, but there is nothing extraordinary about it whatever.

Mr. ANDERSON. I do not want to be put in the attitude of questioning individual promotions, but here is what I am trying to find out, How many promotions have been made under this lump sum since July 1, and how much is involved in those promotions?

Mr. MARVIN. The amount involved, Mr. Chairman, is twenty-seven thousand and some odd dollars. I do not know the exact figures now, but the amount is practically obligated at the present time and the number of promotions which have been made may seem to be pretty large, but when you come to add it up you will find there have been a good many changes and that it has taken only some \$27,000 to make all of the changes that have occurred, plus some promotions made possible by the retirement of the men who had reached the age of 70 years.

I can give you a statement if you wish, and will insert it in the record (table appears hereafter).

Mr. ANDERSON. I would like to have a statement for the record as to the number of promotions made under this lump sum last year; then I would like for you to tell us what promotions you contemplate from this lump sum for next year.

Mr. MARVIN. The promotions that are contemplated, so far as they fall in the estimate, are those items on page 36; that is to say, the difference between the 1922 and the 1921 estimates. It will make a small increase.

If you will permit me, Mr. Chairman, to submit a statement showing it in detail I will be glad to do so. These are not necessarily all promotions. However, in any case where we wish to take on new men—additional men—

Mr. ANDERSON (interposing). My impression is that the number of men you indicated as being involved in this \$19,000 is not equivalent to the number of men which you apparently had under this tabulated statement. I have not gone over it carefully, but it strikes me that there are something like 67 new men added by this tabulation.

Mr. MARVIN. The only way to clear that up is for me to make a statement.

Mr. ANDERSON. Of course; it is impossible to tell definitely, because you can not tell where promotions have been made unless you have a statement showing just what promotions you intend to make, and how many men you intend to put on.

Mr. MARVIN. The condition we are confronted with, Mr. Chairman, is simply this: That when we need new men for this extension, this new work which is necessary, I can not go outside and get the men who have the training and the qualifications to do it. I may have to take a man and send him across the country to another station to perform this work. That man will be put in at a salary which we consider appropriate for that responsibility. Now, it may mean a promotion to him, but ultimately it means that a position is to be filled by a new man somewhere in the organization and that means a new man. That is the way we want to look at it. As I explained in my statement, it is simply impossible for the Weather Bureau to get a trained official outside of our organization. We must bring these capable men with education into the bureau in the subordinate grades and give them the training that makes them appropriate for our work.

Mr. BYRNES. I want to call your attention to that table and if it represents anything it must represent an estimate for 2,325 employees as against 2,272.

Mr. MARVIN. Oh, that is different. I understand where your trouble is now. All of these people are observers, assistant observers, warning distributors, vessel reporters, and apprentices, etc., emergency assistant observers, apprentices, assistants, and messenger boys.

Mr. HARRISON. But is there an increase in the number of employees there, Mr. Byrnes?

Mr. BYRNES. The statement is for 53 more employees. There are that many more listed there, according to this statement. It does not go into details, but the majority seems to be among the observers.

Mr. MARVIN. They are not commissioned employees in that table. That part of the table contains a list of men who receive compensation under this appropriation. In fact, part of these people are not commissioned employees. A large number of them are these men who simply report the range the condition of the rivers and make special observations for which they receive a small compensation.

Mr. BYRNES. It does not change their status whether they are commissioned or not. The proposition is that you have 53 more employees for next year than you have for this year.

Mr. MARVIN. It does make a difference whether they are commissioned or not in the pay they receive. The fact that a man sends in a report to us does not indicate that he is a regular employee, and that he receives a salary.

Mr. BYRNES. Well, you have them this year, have you not? The regular employees receive a regular salary, but you have got in this list 1,695.

Mr. MARVIN. Yes, sir.

Mr. BYRNES. That is increased in the appropriation under the same item for this year to 1,725.

Mr. MARVIN. Yes, sir.

BYRNES. So, they are employees, or if you want to put it in another way, you are providing that there shall be 2,325 employees appropriated for, who are to receive compensation under this item as against 2,372 for the fiscal year 1921 under the same item.

MARVIN. That is entirely correct, but the question is how much salary these people receive. If out of 2,000 of those there are 1,500 people who receive only \$10 a month wages, it makes a difference whether they are added in this for \$10 or as to whether they receive a thousand dollars.

BYRNES. I see what you are driving at.

ANDERSON. Well, you have got fifty-odd employees here classed as meteorologists, added to your roll, which you propose to add to the roll for 1922. There is not any doubt but that you have got fifty-odd employees apparently added in, classed as meteorologists.

HARRISON. There are 53 altogether. There are 30 in the class receiving merely nominal compensation, Mr. Chairman, and 10 emergency assistant observers, apprentices, and assistants and messenger.

ANDERSON. If you will add up those two columns where they are proposed to be put on, you will see that they are meteorologists—and you will find there that there is a difference of 59.

BYRNES. Fifty-nine is right. I do not see how your table is correct at the bottom, because if you will—

HARRISON (interposing). You will notice, Mr. Chairman, that the class of observers, assistant observers, warning distributors, vessel reporters, and apprentices receive from \$960 down to \$480, and that amounts for 32 of them.

ANDERSON. Yes; 32; but going back to the question that has been asked. Undoubtedly it is correct that the salary of the employees, the compensation for these employees is \$1,200 and above.

HARRISON. Yes, sir.

ANDERSON. You propose next year 454 as against 395 for this

HARRISON. Yes, sir.

ANDERSON. And you entirely eliminate observers, assistant observers, warning distributors, vessel reporters, and apprentices—

HARRISON (interposing). Yes, sir; 32 of those go into the higher grades.

BYRNES. Why are you promoting those men?

HARRISON. Mr. Chairman, you understand that the Weather Bureau has no outside agency from which it can secure trained men who are trained to do its work. It is compelled to train its employees—to bring them in in the lower grades and train them in meteorology. There are very few institutions in this country that are training men as meteorologists, and the Weather Bureau therefore is compelled to develop its own personnel. These messengers go up through the grades of apprentice, assistant observer, observers to the position of meteorologist, which is the highest position in meteorological work.

ANDERSON. You have to run your own training school?

MARVIN. The Weather Bureau has to train its own men. Mr. Chairman, I want to say that we are compelled to do that much as we wish. I want to bring in educated men instead of taking

men in the lower grades exclusively, taking these lower grade men and boys and then training them up. The future success of the bureau depends on the character of men that we will be able to get in. We ought to be able to get in some recruit material out of the universities at salaries that will attract them, but except in a few cases it has been impossible to do so with the small salaries that we could offer and the small prospects of promotion. These men would not enter. A university graduate will not come into the bureau because they can get much better employment somewhere else.

Mr. ANDERSON. I would like to have the statement I asked for.

Mr. MARVIN. I will get that statement for you, Mr. Chairman, and I think it will clear up that table.

Promotions in the field effected on the miscellaneous roll from July 1 to Dec. 20, 1920.

Title.	Salary grade.		Number of employees.	Apparent increase	
	From—	To—		Individual.	Total.
Meteorologist.....	\$3,240	\$3,600	2	\$360	\$720
Do.....	2,880	3,000	2	120	240
Do.....	2,520	3,000	5	480	2,400
Do.....	2,280	2,520	10	240	2,400
Do.....	2,160	2,520	1	360	360
Do.....	2,280	2,500	3	220	660
Do.....	2,160	2,280	14	120	1,680
Do.....	1,800	2,160	19	360	6,840
Do.....	1,620	2,160	1	540	540
Do.....	1,800	2,040	4	240	960
Do.....	1,620	1,800	39	180	7,020
Observers to meteorologists.....	1,440	1,620	34	180	6,120
Observer.....	1,260	1,440	49	180	8,820
Printer to observer.....	1,300	1,440	1	140	140
Assistant observer to observer.....	1,000	1,260	8	180	1,440
Apprentice.....	480	720	1	240	240
Messenger boy to apprentice.....	480	720	1	240	240
Apprentice.....	460	600	2	120	240
Messenger boy to apprentice.....	480	600	1	120	120
Total.....			197		41,820

¹ Apparent increase of \$480, but actual increase of \$260 because of loss of bonus.
² Apparent increase of \$240, but actual increase of \$220 because of loss of portion of bonus.
³ Apparent increase of \$360, but actual increase of \$340 because of loss of portion of bonus.
Average actual salary increase received by employees, when loss of bonus is considered..... \$205.
Average apparent salary increase..... 212.

This table does not include 15 increases in salary of \$180 each, amounting to \$2,700, charged to the appropriation for "observing, measuring, and investigating atmospheric phenomenon."
NOTE.--Although promotions totaling \$41,820 have been made since July 1, 1920, the actual increase in the total per annum payment for salaries is \$14,120. The additional sum of \$27,700 used in promotion was made available because of retirements, resignations, and salary adjustments, due to filling vacancies by appointments at lower salaries, but does not represent an actual increase in the total per annum amount devoted to salaries. In other words, the maximum approximate amount that will be expended for salaries during the fiscal year 1922 will be only \$14,120 in excess of the per annum rate in effect July 1, 1920, plus the salaries for the new places as provided in the estimates.

Statement showing present and proposed salary expenditures.

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places are carried temporarily on the miscellaneous roll and are to be transferred to the statutory employees are not commissioned and are occupied only a short period each day in taking special emperature, rainfall and river observations, etc., and in displaying storm warnings. Some are continuously and others for a portion of the year. The pay in no case exceeds \$25 per month, special meteorological observers located in the West Indies, who are paid \$40 per month for 6 the year, and 8 in Alaska who are paid \$40 per month throughout the year. The emergency are employed only in emergencies and for short periods averaging less than 20 days each. The present salary expenditure is \$822,720, to which has been added the additional amounts in the estimates for new places (commissioned employees) and special observations and reports nished employees), making a total of \$866,440. This is the approximate amount that will be salaries. Promotions will be made as indicated in the various salary rates only as it may be le to do so by reason of resignations and rearrangements on the roll.

OFFICIAL TRAVELING EXPENSES.

7, the next item is number 67, for official traveling expenses, 0. re is an increase in that item of \$7,500, which is explained at ttom of the page as follows:

HIGHER EXPENSES OF TRAVEL, ETC.

ir thousand five hundred dollars to cover the higher expenses of incident to recent increased railroad and sleeping car fares, in ction with the regular forecasting work of the Weather Bureau;

\$1,000 for travel required in connection with orchard-spraying service; and \$1,000 for travel incident to an extension to the river and flood work.

MAINTENANCE OF STATIONS FOR INVESTIGATING ATMOSPHERIC PHENOMENA.

The next item, Mr. Chairman, is number 68, for the maintenance of stations for observing, measuring, and investigating atmospheric phenomena, including salaries, travel, and other expenses in the city of Washington and elsewhere, \$281,020.

There is a net increase in that item of \$200,000. That is the same increase that we asked for last year, and we are again asking for it this year.

AIR OBSERVATIONS BY MEANS OF KITES, BALLOONS, ETC.

This work covers the investigation into the upper air conditions by means of kites, balloons, sounding balloons, etc.

It is in line with the work that was inaugurated quite a number of years ago, but we have only been able to carry it on in a very modest way, with only a few observation stations.

During the war Congress gave us an appropriation of \$100,000 and the work was set out in this separate item. The balance of \$100,000, over \$81,000 as you see here, is in the statutory roll. Where transfers have been made to the statutory roll this item has been reduced accordingly.

The increase that we want this year is to take up this upper air work in a degree commensurate with the demands of the times, in connection with aviation, and as well as for the study of the atmospheric conditions generally. It is really foolhardy, Mr. Chairman, for an aviator to go up without weather advice. We have six over the country at which we make kite and balloon observations and some additional stations at which we make only pilot balloon observations.

It is the purpose to have telegraph reports come to Washington and we then issue these forecasts as to the flying conditions for the different sections of the country.

We have performed a most important service to the Army and the Navy. The recent balloon races and the transcontinental flights, and the aerial mail service, between here and New York, and New York and Chicago, are all instances of the service.

We want sufficient money to enable the Weather Bureau to do that work so that it will be unnecessary for any other branch of the Government to do it. Now, if we fail to do this, of course, probably the aviation interests are going to do it themselves.

Mr. ANDERSON. Are they not doing it themselves now?

Mr. MARVIN. No; they are depending on us chiefly, and we have the organization and we have the surface observation reports which are necessary to go with these upper-air reports.

The Army and Navy are making certain observations at certain posts. Where they make observations we do not make them, but we supplement each other's work.

Mr. ANDERSON. They make observations?

Mr. MARVIN. Yes, sir; they make observations—

Mr. ANDERSON (interposing). Where they are engaged in flying?

Mr. MARVIN. Where they have a military post; and those observations are telegraphed to us, and we use them with our own and supplement them with our forecasts.

NUMBER OF STATIONS.

Now, we have six stations. This scheme here contemplates the addition of two kite stations where we may make observations from kites and balloons, and a number of other places not mentioned. The importance of this work is very great to meet the present conditions in regard to the exploration and study of the upper air.

Mr. BYRNES. Who do you furnish them to?

Mr. MARVIN. We furnish them to the Post Office Department and the Army and the Navy and civil aviation interests.

Mr. BYRNES. You say that the Army and the Navy are engaged in making these observations?

Mr. MARVIN. They make observations at certain points, but they can not make forecasts from one report. Forecasting requires a map of the weather conditions over the country from which you can subsequently estimate what conditions are going to occur later. We need the reports from as many outlying points as it is possible for us to get. We chart those on weather maps, from which forecasts are made. Now, the Army people make an observation at a post as to the weather conditions there, but they have no means of making observations as to the entire country.

Mr. BYRNES. I know, but they only need this service where they are engaged in flying.

Mr. MARVIN. They are also engaged in cross-country flying.

Mr. BYRNES. Well, how much of that cross-country flying are they engaged in?

Mr. MARVIN. Well, they do a great deal of flying right now, you know.

Mr. BYRNES. Well, I think they confine it to a restricted area as a general thing around the post.

Mr. MARVIN. Well, it is true that the service is restricted. We could not possibly cover the entire country with this small amount of money—supply forecasts all over the country—but we cover the country as well as we can.

Mr. ANDERSON. You have no idea that if you engage in this work that they would discontinue their observations altogether?

Mr. MARVIN. Well, I do not think that they would discontinue their observations altogether, but if we are unable to furnish them with what they need it will be necessary for them to do a great deal more of it.

Mr. HARRISON. What Mr. Byrnes is trying to get at, Prof. Marvin, is whether or not the Army and the Navy and the Post Office Department will use this service and discontinue making their own observations.

Mr. MARVIN. Well, let me answer that, then.

Mr. BYRNES. You have accurately interpreted my question.

Mr. MARVIN. At the point where they make those flights they use our forecasts very much. I think that is a fact, and that they desire

that this information should come from a reliable source, so that it can be depended upon.

Mr. BYRNES. What I am trying to get at is the necessity for it.

Mr. MARVIN. Well, I think the necessity for the thing is the fact that they want our forecasts in those cross-country flights, and they are doing a great deal of cross-country flying. Their flying is not confined to a certain post. At Dayton, for instance, where the Army has their engineering plant, they are flying all over the State of Ohio. They want our forecasts also in the Aerial Mail Service. They use our forecasts all of the time. Then civil aviation is coming in. This work can not all be done in a moment. It requires funds and time to build up the service. We must be prepared to give the service as it is needed.

Mr. ANDERSON. You propose 40 additional new stations?

PILOT BALLOON STATIONS.

Mr. MARVIN. For pilot balloon stations. Those pilot balloons are made of rubber and inflated with hydrogen. They are released at a certain time and are observed each minute of their flight upward and as they are carried along with the wind. They are observed with a theodolite for checking the exact position, and we know quite accurately how rapidly the balloon ascends, sometimes for an hour or two, when we can follow them for that length of time. We note the motion of the balloons through every layer of air through which they pass, and from that record we know the different speeds and directions of the wind in these different strata. Now, that is the report from one station, and we get like reports from several all over the country and enter the data on a chart, and from that chart we can get the flow of the air in the upper strata.

Those observations are also very useful in connection with the forecasting of surface conditions, and they must be supplementary to the surface observation. The whole program of work is one that has come with the introduction of aviation. It is necessary to have this service to assist in the navigation of the air.

On the occasion of the balloon races which were started recently from Birmingham, Ala., we sent a man down there with a pilot balloon outfit to make observations. I had a letter from Gen. Menoher—I do not believe that I brought it with me—in which he spoke in very commendatory terms as to aid we had rendered, and the contestants were all very appreciative.

Mr. ANDERSON. Is this \$115,000 hung onto an aviation proposition, too?

Mr. MARVIN. No, sir; it is in connection with the navigation in the air, but it is not connected with any other project.

Mr. ANDERSON. Well, it seems to indicate that the necessity, or the alleged necessity, of this \$115,000 is due to the possibilities of air navigation.

Mr. MARVIN. Well, Mr. Chairman, this is to a certain extent to enable our service to keep abreast with the progress of aviation and to keep aviation safe, as far as it can be kept safe, by good weather forecasting and reliable weather information.

Now, you may say that this \$200,000 is unnecessary at this time. We think it is necessary at this time for you to give us that much.

but that is a matter for the judgment of the committee. We submitted this last year and we submit it again this year, and I think it is necessary that this should be done, and that this work should be met in the future; and I hope that it may appeal to you, gentlemen. As aviation increases it is going to be necessary to have local centers from which we can furnish aviation forecasts. In this work at the present time we have scarcely no service west of Denver, Colo. Yet there is a good deal of aviation on the Pacific coast. We want to put a station in the Northwest—a kite station—and distribute some of those balloon stations out there. It is very valuable to us to have knowledge of that character, where we can get it, for the general forecasting. This helps surface reports a great deal in making the weather forecasts, but the upper-air observations add to that in giving us further information in regard to the atmospheric conditions on which we can make an intelligent forecast.

Mr. ANDERSON. Well, these additional pilot-balloon stations can be located at points other than where you have stations?

Mr. MARVIN. Yes, sir; certainly. We want, as you will see there under item (c), for instance, to put some balloons in the West Indies in connection with hurricane warnings.

Mr. ANDERSON. Well, let us stick to this \$115,000 now for a little while.

Mr. MARVIN. The only additional statement I can make is that this fund will be used to establish these two kite stations and 40 additional pilot-balloon stations in the United States, not including those of the West Indies.

Mr. ANDERSON. That is practically one station for every State?

Mr. MARVIN. One pilot-balloon station; yes, sir. That is not an unreasonable number by any manner of means when you consider the enormous extent of the United States and the atmospheric conditions.

Mr. ANDERSON. Well, it is when you consider the number of airplanes that are flying around just now. In fact, the War Department says that they do not have any that are fit to fly.

EXTENSION OF UPPER-AIR STATIONS IN THE WEST INDIES IN CONNECTION WITH HURRICANE WARNINGS.

All right; now let us take up item (c).

Mr. MARVIN. That is for \$10,000 for the extension of upper-air stations in the West Indies in connection with the hurricane warnings. That is simply an addition to the pilot balloon observation work by the establishment of a few stations in the West Indies. It is simply carrying the observational work into the West Indies and the Caribbean Sea region where hurricanes are frequent during the summer. A knowledge of the upper-air conditions during the hurricane season has proven to be very valuable.

Mr. ANDERSON. All right.

DEVELOPMENT OF METHODS OF OBTAINING RELIABLE METEOROLOGICAL RECORDS IN AIRPLANES.

Mr. MARVIN. The next is item (d), \$10,000 for development of methods of obtaining reliable meteorological records in airplanes. At the present time we get all of our observations of upper-air conditions

from kites or by balloons which are sent up. Now, airplanes, on account of their changing levels and other attendant conditions, can not well be relied upon to make observations for us. It is difficult to get reliable observations from the airplane, because they do not know accurately the altitude at which they are flying, and then the immediate effect of the airplane upon the instrument is uncertain. Up to the present time methods of making systematic and accurate observation on airplanes have not been developed. It is proposed to use airplanes as an agency for collecting observation data in the upper air.

Mr. ANDERSON. Just how is that proposition to be carried out?

Mr. MARVIN. Well, it is a proposition of getting instruments and equipments that can be used on airplanes to obtain results that may be compared with observations obtained by other means, and developing reliable, dependable methods of getting observations from airplanes. Instrumental equipment and the other factors of the problems must be developed and solved in a practicable and workable scheme.

SOUNDING-BALLOON OBSERVATION WORK.

The sounding-balloon observation work item (e) is a different proposition from the small pilot balloon. It is only within a small number of years really that we have known the conditions in the very high strata of the air, and those have been learned from the observations obtained by the use of so-called sounding balloons.

They are generally small balloons that carry an instrument with them, and they go to a very great height, making a record of the conditions all along. Generally the balloon used for that purpose is made of rubber. The balloon will expand as it goes higher up and gets into the rarified atmosphere, and finally bursts. It carries a little parachute from which the instrument is suspended and by means of which it is lowered safely to the ground and it gives a record of the conditions through which it has passed. The study of the conditions in the upper air by these agencies is a thing that was previously entirely unknown. It is very useful in connection with general meteorology, and we want to extend this work which was being carried on before the war, but which was suspended on account of the difficulty of getting equipment for the purpose and the necessity for a large number of balloons for carrying on the work.

Mr. ANDERSON. Have you not been doing any of this work during the last year, then?

Mr. MARVIN. No, sir; this is work which, of course, we want to do and we need the information which we develop from observations of the free air for further development of the science of the upper atmosphere.

ESTABLISHMENT OF AERIAL FORECAST CENTERS.

The last item is item (f) \$20,000 for the establishment of aerial forecast centers. That is an item that I alluded to briefly a moment ago. With the growth of the aviation service it will be necessary to put forecasters in the field at widely separated points for the

purpose of furnishing this information promptly to the aviation needs. At the present time this is all done in Washington. And when they held the transcontinental airplane races, when those races were in progress, we handled that entire forecast from Washington, giving those aviators advice all along the route as to the conditions that they were to encounter. We would like to organize and increase the work under this item in order to be abreast of the times and be prepared to render this service so that it will not be necessary for any other organization to do it. The Weather Bureau is the logical organization to perform this work. There is no question about that. And the information and advice which the aviators need we should be able to furnish and we want to be in a position to furnish it.

NUMBER OF STATIONS.

Mr. ANDERSON. How many stations do you contemplate, do you say?

Mr. MARVIN. We now have five forecasting points at the present time. We would like to start with forecasting probably at each of those five districts, although it might be found necessary to select some other points.

Mr. ANDERSON. All right.

MAINTENANCE OF A HIGHWAY WEATHER SERVICE.

Mr. MARVIN. Now, the next is item No. 69, for the maintenance of a highway weather service for the collection of reports concerning the effects of weather on public highways and the issuing of advices, forecasts, and warnings in highway travel, in cooperation with Federal, State, and local agencies, including salaries, travel, and all other expenses in the city of Washington and elsewhere, \$20,000. That item is submitted as a new one. It is for the extension of work which was begun in the winter of 1917-18 as a war measure to aid the Government motor truck transportation service by furnishing information regarding the effect of snowfall on roads.

This work was begun during the war, when the State commission of Pennsylvania asked us to give them forecasts as to the weather conditions along the highways through Pennsylvania when the motor trucks were moving eastward, and the work has been so favorably received that we have been asked to extend it elsewhere, and we are now performing this work as far as our limited means will permit at quite a number of our stations.

The work at the present time is almost entirely carried on by mail. There is only a small amount of telegraphic charges connected with it. We get reports of the road conditions on the different highways—

Mr. ANDERSON (interposing). Well, the weather is not any different over the highways from what it is in the surrounding country.

Mr. MARVIN. Well, this gives the condition of the roads, etc., as they are affected by the weather.

Mr. BYRNES. But you want the Weather Bureau to disregard its ordinary function of forecasting as to the weather and report now on the condition of the roads?

Mr. MARVIN. That is true to a certain extent, Mr. Byrnes. As I say, we were urged to perform this service.

Mr. BYRNES. Why should the Weather Bureau be given this work in preference to the Bureau of Public Roads?

Mr. MARVIN. Well, because we have an agency for collecting and disseminating weather information throughout the United States.

Mr. BYRNES. But, unless a man goes out on the road, how could he tell?

Mr. MARVIN. We get reports as to road conditions.

Mr. BYRNES. But what is the value of a report unless you get it from a man who has been out on the road?

Mr. MARVIN. Well, people who go out on the road report to us.

Mr. BYRNES. I know, but the question is can you tell the condition of the roads between Richmond and Petersburg now?

Mr. MARVIN. No, sir.

Mr. BYRNES. Without having some man go out on that road?

Mr. MARVIN. No, sir.

Mr. BYRNES. You have got to go over the road, and take the trip, and get detailed information as to whether you can get through with a machine. No matter how good weather you have got, unless a man travels over the road you can not tell the condition of the road. You can not tell from a weather forecast the condition of the road between Petersburg and Richmond to-day.

Mr. MARVIN. But we can get out a report because the highway people and others cooperate with us in this respect and furnish statements as to the condition of the roads.

Mr. BYRNES. I know, but you can not tell the condition of the road between Richmond and Petersburg by any forecast. There is a mud hole there and you have got to detour, and you could not tell that from any weather forecast.

Mr. MARVIN. That is a fact, but we get reports as to the condition of that highway from people who go over the highway.

Mr. BYRNES. The highway engineer reports to the weather forecaster at Richmond.

Mr. MARVIN. And the forecaster at Richmond puts that on his map and issues a statement as to what those conditions are.

Mr. BYRNES. Now, that is a recent thing, but why have a bureau under your control do this work—publish this information as to the roads?

Mr. MARVIN. The weather conditions of the roads——

Mr. BYRNES (interposing). No; it is not the weather conditions; the conditions of the roads, because the weather, as the chairman has just stated, the weather conditions are going to be the same on the road as they are off the roads, so far as the weather is concerned.

Mr. MARVIN. Our bulletin is a report of the conditions on the road as affected by the weather and——

Mr. BYRNES (interposing). You know that the automobile associations furnish information as to the condition of the roads.

Mr. MARVIN. They do not have it, and they appeal to us; they want us to furnish it to them. That is just the point. Let me show you some bulletins we issue. Here, Mr. Byrnes, is a sample of what is being done at the present time where this work is carried on. This is a fair sample of what is being done at this time in the different

places, and the matter has been considered by the highway engineers—in fact, it was considered by them at a meeting, a conference here in Washington, and they reported to the Secretary that a general distribution of that information by the Weather Bureau should be made.

Mr. BYRNES. People will let the Government do everything on earth for them, especially work of this kind. There is no doubt about that.

Mr. MARVIN. The question is whether it is of economic benefit to the country.

Mr. BYRNES. That would be the question, and another question is as to whether it is the proper thing for this bureau to do.

Mr. MARVIN. I think that is a very proper question to ask, but I think the question can be answered in the affirmative.

Mr. BYRNES. Now, to whom do you send these reports?

Mr. MARVIN. Well, they go to the automobile interests in the different cities where they are issued and those people have them displayed throughout the cities, at the garages, or elsewhere, and the people traveling on the road covered by the report have the advantage of that information before them, and they know the conditions that they are going to meet. It is a very useful thing. I have an abundance of papers and letters here from the motor people, and the motoring public, in testimony of it.

It is a matter for the committee to determine entirely, whether it is one that should be authorized. The fact that the Weather Bureau has this organization throughout the country constitutes a good argument as to why it should do the work.

Mr. BYRNES. Could the service be performed by the Bureau of Public Roads, as it is necessary to secure information from the highway engineers, it seems to me that the highway engineers ought to furnish the reports of that character.

Mr. MARVIN. I think that could be done; yes, sir; but we can conduct the service for a good deal less money than any other organization can. I think there can be no question about that. We have 200 stations scattered all over the country to-day, for other purposes, and the men are doing this kind of work. We are furnishing advice and information and we have the organization and the machinery, and if you will furnish the additional appropriation we can handle it. If you attempt to have the good roads people and the State highway commissioners take up this work, I think it is bound to be more expensive.

Mr. BYRNES. I do not mean that I would make any attempt to have any other bureau do the work.

Mr. MARVIN. But I believe that it can be shown that the bureau is in a position to do this work economically and advantageously.

Mr. ANDERSON. I read this statement, dated Minneapolis December 15th, and I confess that I would not know whether to go or to stay at home after reading it.

Mr. MARVIN. Well, Mr. Chairman, I should have given you another statement.

Mr. ANDERSON. Generally, I would know enough in the middle of December to stay at home.

The next is item 70, in connection with the protection of forests from fires.

ESTABLISHMENT AND MAINTENANCE OF SPECIAL STATIONS IN NATIONAL FORESTS.

Mr. MARVIN. Item 70 is for the establishment and maintenance of special stations in national forests and elsewhere, the collection of reports, and the issuing of forecasts and warnings in connection with the protection of forests from fires, in cooperation with the Forest Service, State, and other organizations, including salaries, travel, and other expenses in the city of Washington and elsewhere, for which we are submitting \$15,000.

That is another item that has been before the Congress for several times, but not allowed, that has reference to the betterment of forecast conditions incident to the forest fires, either conditions that are prejudicial or beneficial to the fighting of forest fires. The Forest Service during the last year had one of the worst fires in the history of the service. And, we are told by them—in fact this service was inaugurated originally at the solicitation of the Forest Service—that it is a very valuable and very useful service in helping to control forest fires. We have never had any special force to work with in that connection, or any special appropriations, but we have done the best we could in the western regions where it is needed.

We are asking for an item here of \$15,000 that can be devoted to this purpose and will be used for sending men into the field to get acquainted with the forest conditions usually, in order that they may properly understand the real purposes from the meteorologist's point of view. We plan to have a man at San Francisco and perhaps men at two other places in the West who can give advice and information that is peculiarly useful to the Forest Service in fighting fires.

Mr. BYRNES. Now, what would you advise about this? I mean give us an illustration.

Mr. MARVIN. Well, what we would do would be to put the matter in the hands of our official in charge at San Francisco. He is in close touch with the forest situation out there. We would give him a man. He has asked over and over again for a man to study this problem. We would need to put certain instruments in the fields where the forest lookout stations are located and have them furnish reports to us of conditions at those places.

Mr. BYRNES. You say "conditions favorable to the inception and spread of forest fires and of the approach of rains which affect their control after fires have started." Now, what condition would you advise them of as being favorable to the spread of forest fires?

Mr. MARVIN. For instance, after a period of drought, the oncoming of high winds and warm weather will start a fire very rapidly.

Mr. BYRNES. Do you not think he would know that—that after a long drought with a strong wind blowing there was a possibility of fire?

Mr. MARVIN. Yes; but he would not know the wind. He would know when the wind came, but he would not know of the wind before it came. He would not know where a strong wind was likely to occur.

Mr. BYRNES. You could only tell him before it came?

Mr. MARVIN. Yes, sir.

Mr. BYRNES. Then what could he do?

Mr. MARVIN. He could deploy his fire-fighting forces in those regions that are to be affected.

Mr. BYRNES. He knows it is going to be affected by a high wind blowing?

Mr. MARVIN. Yes, sir; he does not know where it is going to come from or when it is going to come. He must be prepared. It is a case of preparedness, so far as the inception of the fires are concerned. It is a case of being prepared by previous advice and warnings.

Mr. ANDERSON. Do you not have any observers in the regions of the national forests now?

Mr. MARVIN. No, sir; we need not employ them. The foresters will be the observers, but we need to put up instruments and make provision for their making observations. Our own men would have to learn the conditions in the different forests where these stations are located. We can not do that by sitting at a desk in San Francisco. A man wants to travel into these regions. The art of forecasting is a difficult problem, and the conditions in the field must be carefully studied in this case.

Mr. BYRNES. What are you going to spend this money for—for the man who will make the observations?

Mr. MARVIN. Part of it will be spent for the man who will make the observations, and also there will be telegraph tolls and charges for the dissemination of reports.

Mr. BYRNES. Now, you do know sometimes your ordinary forecast. You can forecast for 24, 36, or 48 hours?

Mr. MARVIN. Yes, sir.

Mr. BYRNES. Now, if you can forecast the condition of the weather in that way, is it not solely a question of communicating it to these foresters?

Mr. MARVIN. We can, and we are doing it as far as we can, but we want a little more money to do this work on a larger scale. We want the money for the men.

Mr. BYRNES. For the men who are the additional observers?

Mr. MARVIN. The additional forecasters, the men who are to be specialists in this work. We must have at least one good forecaster. Now, if you want to know how this \$15,000 is going to be spent, there is one salary in Washington, \$1,260.

Mr. BYRNES. What is that man going to do?

Mr. MARVIN. He is going to look after the work here and take care of the central-office part of the clerical work and records.

Mr. BYRNES. I thought your idea was to work it out at San Francisco?

ESTIMATED COST.

Mr. MARVIN. I will give you the whole story. I will put these figures in the record showing just how this \$15,000 is going to be spent. I have the figures right here. Now, out of Washington we will spend \$3,600 for salaries; \$3,200 for telegraph and telephone; \$2,200 for instruments, equipment, supplies, miscellaneous expenses; and \$3,250 for observers, the total cost being \$15,000. That is how we propose to spend it.

Mr. BYRNES. Now, the next item.

EXTENSION OF MARINE METEOROLOGICAL WORK.

Mr. MARVIN. The next item is for the extension of the marine meteorological work, the collection of data at sea. You recognize, gentlemen, that meteorology is not limited to continental areas, and one of the greatest objects is to know what is going on over the oceans. For a number of years we have been in cooperation with a number of naval and merchant vessels, where the captain or proper officer makes observations at noon and at the end of the journey or upon arrival in port we get the report by mail. Now, that work was almost lost during the war through the disruption of shipping and everything. We are trying to reestablish those reports and put the service on a much more substantial basis so that we can prepare maps of the entire globe, or at least of the Northern Hemisphere, showing meteorological conditions. As it is, at the present time, we only map the conditions in the United States. We want these maps all over the ocean so that we will have a complete picture of the whole atmospheric conditions around the Northern Hemisphere. The information we collect in this way is of great use to us in giving out information to vessels at sea, which will be possible in conjunction with the wireless reports. Now, the mail reports come in slowly and a long time after the conditions have been observed, but after we have studied maps showing the conditions over the ocean and over the continent for a considerable period of time we learn the run of conditions as they occur, and when we find a certain condition reported by radio and near the shore we can forecast the condition and report it by radio to other vessels.

Mr. ANDERSON. Is not this largely done now by both the United States Navy and the Shipping Board?

Mr. MARVIN. No, sir; not a single bit of it is done except in cooperation with us. Naval vessels make these observations and furnish us with the reports, so far as they can. There are not many reports received from the Navy because few ships are now at sea. The Shipping Board is in close cooperation with us, and we are now inaugurating a system whereby their vessels will make these reports. But this money here is to be used for the collection and study of these reports. The program I have here for that work is, in Washington, total salaries, \$8,000; telegraph, \$1,000; instrumental equipment and supplies, \$2,000; outside of Washington, \$12,000 salaries; instrumental equipment and miscellaneous expenses, \$5,000; telegraphing, \$1,000; traveling expenses, \$1,000; total, \$30,000. In the large cities like New York, Boston, Philadelphia, Norfolk, New Orleans, Pensacola, San Francisco, Seattle, and Portland, we will have agents, Weather Bureau men, who will visit the vessels and check up their instruments and see that their work is correctly done, so as to make the work effective.

Mr. ANDERSON. Now, this is all a part of your general forecast proposition?

Mr. MARVIN. It is a part of it, but the item here is set out as a separate thing, because we thought the committee would like to have it set out separately.

Mr. ANDERSON. If we set it up in this way, it means that you are going to have a separate division with a lot of overhead.

Mr. MARVIN. That would go into what we call the marine division of the work. There is no additional overhead about it, especially, because we have people to chart and map these observations when they come in.

Mr. ANDERSON. You have a marine division now, have you not?

Mr. MARVIN. Yes, sir. This is to strengthen and extend that marine work. Under the law we are compelled to furnish the hydrographic office of the Navy Department this marine information to put on their hydrographic charts. That is to make it unnecessary for them to collect and prepare that material themselves. Formerly they used to do it, but it has been transferred to the Weather Bureau, and we are obligated to furnish this information to them, and we are furnishing it now as fully as the reports permit us. This is for the rehabilitation of this service to make it as effective as possible at the present time. It is an additional item, but it is not new work, and I can only say to the committee that we feel that these things are the things that need to be done and to be taken care of at the present time. It is for the committee to determine what is to be done with it.

Mr. ANDERSON. When does the commission expect a report on this Joint Weather proposition?

Mr. MARVIN. The information has been before the commission for a while. Mr. Harrison, do you know about the status of the report?

Mr. HARRISON. Mr. Chairman, the report has been prepared and has been sent to the other Cabinet officers who are on the commission for signature, and as soon as it is returned from them properly signed, it will be sent to the President for transmission to the Speaker of the House and the President of the Senate.

Mr. ANDERSON. Have you anything further?

Mr. MARVIN. No, sir; I think not.

MONDAY, DECEMBER 20, 1920.

BUREAU OF ANIMAL INDUSTRY.

STATEMENTS OF DR. JOHN B. MOHLER, CHIEF OF THE BUREAU OF ANIMAL INDUSTRY; MR. B. H. RAWL, ASSISTANT CHIEF; DR. J. M. ROMMEL, CHIEF OF THE ANIMAL HUSBANDRY DIVISION; MR. A. H. STEVENS, PAST SECRETARY OF THE BUREAU OF ANIMAL INDUSTRY LAY INSPECTORS NATIONAL ASSOCIATION; AND MR. THOMAS NOONE.

ADJUSTMENT OF AND INCREASES IN SALARIES—ELIMINATION OF LOWER-GRADE POSITIONS.

Mr. HARRISON. The next bureau is Animal Industry. Item No. 1 will be discussed later.

Dr. MOHLER. Mr. Chairman and gentlemen, the first item that I would like to discuss this afternoon is the statutory roll on page 42. You will note here that we have endeavored to make an adjustment of the statutory positions, the effect of the change being to increase the number of places above \$1,400 and to reduce the number below \$1,400.

Mr. HARRISON. Doctor, you must call their attention to the fact, especially in view of what has been said of the other bureaus, that

there is a reduction of 37 in the number of places and \$6,220 in the amount.

Dr. MOHLER. Yes, sir; altogether the actual decrease referred to is \$6,220, with the elimination of 37 clerical and subclerical positions.

Mr. HARRISON. That is what you like to see, Mr. Byrnes.

Mr. BYRNES. I thought he claimed a decrease of \$3,720.

Mr. HARRISON. If you look on the page you will see the figures. I am speaking of the Bureau of Animal Industry as a whole.

Dr. MOHLER. The number of new adjusted places we are asking for is 209, together with 3 lump-fund transfers of \$1,400 clerks, and the total amount involved, including item 1, is \$285,460, while the number of places recommended to be dropped, as recorded on page 45, is 246 at an expense of \$291,680, which represents an actual saving of \$6,220 per year.

Mr. BYRNES. How do you hope to get through with that decreased number of employees?

Dr. MOHLER. We are going to ask for an increase at the top of this statutory roll so that by giving higher salaries to our best workers we will have them more contented and they will surely perform more and better work, thereby reducing the need for a number of positions below \$1,400 and \$1,200.

NUMBER OF EMPLOYEES—VACANCIES.

Mr. ANDERSON. How many vacancies are included in that number 37 that you propose to drop now?

Dr. MOHLER. At the present time we have about 57 temporary vacancies.

Mr. ANDERSON. On the statutory roll?

Dr. MOHLER. Yes, sir; there are 32 vacancies in the \$1,200 positions, 7 vacancies in the \$1,100 positions, about the same number in the \$1,000 positions, and a few scattering in the \$960 and \$900 positions. At the present time we have 417 clerical places on the roll and there are only 360 places filled. There are therefore 57 vacancies.

Mr. BYRNES. You really want to put about 20 more employees at work in the office than you now have?

Dr. MOHLER. No, sir; not at all. We want to decrease the total number on the statutory roll.

Mr. BYRNES. You have 417 on the roll?

Dr. MOHLER. Yes, sir.

Mr. BYRNES. But you have actually at work only 360?

Dr. MOHLER. Yes, sir; at this moment; but this is only temporary.

Mr. BYRNES. And you have 57 vacancies. Now, what do you expect to reduce by this method—37?

Dr. MOHLER. Yes, sir. We have 360 places filled, but you are not taking into consideration the additional number that will be occupied as soon as we can find clerks to fill them. Appointments as well as resignations pass over my desk daily.

Mr. BYRNES. I know; but you have not got them there to-day, and the work of the bureau was going on before you found those places.

Dr. MOHLER. Yes; we can continue our work temporarily with a decreased force, as when clerks become sick or take their vacations, but it would be against efficiency if we were so short handed throughout the year. These are all civil-service vacancies. We were trying to fill several vacant places in the Western States this morning.

Mr. ANDERSON. It is perfectly clear that you have too many now.

Dr. MOHLER. No; I would not say that. We have too many low-grade positions and not enough high-grade positions. That is the whole secret in a nutshell. What we are asking for is to have the salaries for some of the higher positions increased.

Mr. BYRNES. Have you been unable to fill the low-grade positions for any length of time?

Dr. MOHLER. Yes, sir. Last year we turned in about 50 of these low-grade positions, reducing the statutory roll appropriation accordingly, and now we want to do the same thing, but we do not want to reduce the statutory roll if we can not get some increases for these high-grade clerks at the top of the list. Our proposition is to have the statutory roll contain only 394 clerks, while the present roll includes 417 clerks, and at this time there are 360 places filled. If these 394 adjusted positions are given to us, we will have a smaller ratio of vacancies, as it has been mighty hard to keep our lower salary positions occupied, the turnover in these places being unduly large.

Mr. ANDERSON. If you expect to have 394 places as against 417, you are dropping only 23 instead of 37.

Dr. MOHLER. We are dropping 23 clerks. Where do you get your 37?

Mr. ANDERSON. It says "decrease of 37." That may include some messengers, however.

Dr. MOHLER. It does include 10 messengers, a quarantine assistant, etc., but I am speaking about the clerical force. The other statement refers to the statutory roll in its entirety, but I am referring now only to the clerical force.

Mr. ANDERSON. Now, let us get this straight. How many clerks have you now?

Dr. MOHLER. At the present time we have 360 places filled.

Mr. ANDERSON. And how many vacancies in the clerks?

Dr. MOHLER. Fifty-seven vacancies.

Mr. ANDERSON. That is 417?

Dr. MOHLER. And these vacancies are all in the positions of \$1,200 and below. Now, what we are asking for is to have the number on the present statutory roll reduced to 394, thereby saving this amount of \$6,220 actual decrease. I may say that some of these six executive clerks at \$2,000 have been in the service for twenty-odd years, and they have been held down because there have been no places above them. Last year I asked for a certain number of higher-salaried positions, and we got 47 additional places in the \$1,200 grade on the statutory roll, but that did not aid much, because those 47 positions merely helped out some of the clerks who were in the \$900, \$1,000, and \$1,100 positions below.

Mr. ANDERSON. Does that general statement cover the whole matter?

Dr. MOHLER. Yes, sir. It is merely a readjustment so that we can pay higher salaries to our best grade of clerical assistants.

Mr. ANDERSON. Will you furnish us with a statement of the promotions that are proposed, tabulated, so that we can understand what it means?

Dr. MOHLER. All right, sir. I have tried to simplify the present form here in the Book of Estimates by substituting the parallel col-

umn method to show where the proposed promotions come in. You may wish to scrutinize this.

Mr. ANDERSON. Without taking the bonus into consideration, you have 200 clerks at \$1,200.

Dr. MOHLER. Yes, sir.

Mr. ANDERSON. How many of these are stenographic positions?

Dr. MOHLER. At least 50 per cent of them are stenographers. Below the \$1,200 grade of positions there are only a few stenographers. Most of the smaller salaried clerks are in packing houses, where they make clerical notations of the amount of meats that are going through different processes. We can get \$900 clerks in some of the larger cities, and that is about the only place we can get them, because they live at home with their parents.

Mr. ANDERSON. What salaries are you paying for stenographers now?

Dr. MOHLER. Many of the \$1,200 clerks are stenographers, but some of the stenographers are higher grade \$1,400 and \$1,500 employees. A large number, at least 50 per cent, of those \$1,200 positions are filled by stenographers. We can not get a stenographer at present for less than \$1,200. We have tried for some time but without success.

Mr. ANDERSON. That is, \$1,200 without a bonus?

Dr. MOHLER. Yes, sir; \$1,200 without the bonus. They do not get the bonus until they prove their efficiency.

Mr. ANDERSON. After 30 days?

Dr. MOHLER. Yes, sir.

Mr. ANDERSON. So that you are paying stenographers an entrance salary of \$1,440.

Dr. MOHLER. Yes, sir; if they are satisfactory.

Mr. ANDERSON. Will you furnish us that statement for the record?

Dr. MOHLER. I will put it in at this point.

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Reduction in places	37
Reduction in funds	93,720
Less proposed increase to chief of bureau	2,500
	<u>6,220</u>

MESSENGERS—VACANCIES.

Mr. ANDERSON. I would like to have you make some statement in reference to this messenger-boy proposition. How many vacancies have you in your messenger-boy force?

Dr. MOHLER. There are 10 vacancies, as I remember now, but we have so adjusted the work as to permit the dropping of these places. There is another position there, a quarantine assistant at \$900. We have had that place on our roll for a long time and we can not get anybody to fill the position, so we are asking that it be dropped also.

INSPECTION AND QUARANTINE WORK—FOR ERADICATION OF SCABIES IN SHEEP AND CATTLE.

The next item, page 46, item No. 58, is for inspection and quarantine work, including all necessary expenses for the eradication of scabies in sheep and cattle, the inspection of southern cattle, the supervision of the transportation of live stock and the inspection of vessels, the execution of the 28-hour law, the inspection and quarantine of imported animals, including the establishment and maintenance of quarantine stations and repairs, alterations, improvements, or additions to buildings thereon; the inspection work relative to the existence of contagious diseases and the mallein testing of animals, \$605,740. In this item we have asked for an increase, altogether, of \$86,100, divided among five different projects. For instance, under paragraph A, we are asking \$10,000 additional for cooperative work in the eradication of sheep scabies. We are now cooperating with about 20 or 21 States throughout the Central West and the extreme West, and on account of the drought conditions obtaining the last few years and also as a result of the war there has been considerable scabies spread in various Western States that were formerly in better shape than at the present time. In order to be able to handle these new outbreaks in some of the larger sheep-producing States, we will need more funds.

Mr. ANDERSON. How much are you spending on this work now?

Dr. MOHLER. About \$153,000.

Mr. ANDERSON. On the sheep scabies work?

Dr. MOHLER. Yes, sir.

Mr. ANDERSON. Now you say in this note that the territory released from quarantine amounts to 1,729,016 square miles, leaving 56,329 square miles still under Federal quarantine.

Dr. MOHLER. Yes, sir.

Mr. ANDERSON. On the basis of that statement it seems rather strange to ask for an increase at this time in this item.

Dr. MOHLER. Well, the work is more expensive to conduct now than it has been at any time in the past, and the heavy movement of sheep on account of the drought in New Mexico and Texas a year ago, and also in the Northwestern section, in Montana and Wyoming, has caused a great deal of spreading of scabies from those sections into the more eastern States. Michigan has been in bad shape as a result of sheep brought in from New Mexico, and Missouri and Iowa and a good many other States have been infected. So that we have had to scatter our men to a good many other points than we

did a year ago. This item of \$10,000 is going to be consumed traveling expenses and subsistence of men who are already on roll. We do not ask for promotions or anything of that sort except to maintain the force we have now. We do not want to lose ground that we have already gained. We lost enough on account of the States taking off their employees on account of war conditions.

Mr. ANDERSON. Are the States putting their men back?

Dr. MOHLER. Some of them are, but there is more scabies now in certain western States—I do not like to mention States by name because they are too well represented here, but some of these States are doing very little and we have to do a great deal, because the infected States look to us for protection. For instance, between Idaho and Montana and between California and Nevada, as well as at other points, we have to guard the State lines.

Mr. ANDERSON. Just what do you mean to do in sheep scabies work?

Dr. MOHLER. Well, every spring when the sheep go on to the national forests we have men there to inspect them and if they are found exposed or infected we dip them.

Mr. ANDERSON. Who dips them?

Dr. MOHLER. Our own inspectors supervise the work of the men that own the sheep. We merely see that the job is done in proper shape and that the sheep go through the proper dipping solution. We have nothing to do with the expense of building or charging for dipping vats. We are there to see that the material is of a certain strength and that the dipping is properly done. Now, this inspection often gives us the lead as to where scabies exists in the spring of the year and as soon as we find scabies in the sheep presented to go to the national forests we trace them back to the point of origin and see that all the infected and exposed sheep are dipped. Very often we get reports from Kansas City, Omaha, Denver, and from other public markets of certain sheep coming through with scab infection and then, for example, if we find they came from the State of Oregon we inform our inspector in charge of that State and his inspector in this western State will go and make an inspection of the sheep in that locality and get out their dipping orders, so that all the sheep that have been infected or exposed are dipped. We dip just as many sheep per month, Mr. Chairman, as we dipped when only half of that territory was infected. Last year we dipped over 2,000 head of sheep in over 2,000 bands, but a small amount of infection has been scattered around in 20 or 21 different States during the last year or two, and it will therefore require additional funds to inspect the sheep and supervise the dippings in these newly infected sections.

Mr. BYRNES. Does the owner of the sheep object to it?

Dr. MOHLER. Occasionally they object, but not as a rule, because they know they can not get a market for sheep with scabies and they see the benefit of it. That stage has passed long ago. They used to object very strenuously 15 years ago, but now we get their unequal support. In fact, several sheepmen came into my office some time ago and asked if we were not going to request additional funds this time, because they thought there was going to be more scabies than usual this summer.

Mr. ANDERSON. Do these people only dip their sheep when you go out there?

Dr. MOHLER. Oh, there is a good deal of voluntary dipping constantly going on, but we are not after the voluntary dippers. We go after the men who do not want to spend money to dip their sheep, the men who send their exposed or probably infected sheep to market without dipping them, at the risk of infecting healthy sheep. However, a good many sheep are dipped voluntarily by their owners.

FOR ERADICATION OF MANGE OF CATTLE AND HORSES.

Now, the next item, paragraph B, calls for \$15,000 for cooperative work in the eradication of mange of cattle and horses. That disease is about the same as scabies in sheep. The requested increase is for the same purpose as in the preceding item, namely, to conduct the work that we have been doing along more comprehensive lines by adding four employees and to cover the additional expenses for extra railroad fares and the higher cost of subsistence.

Mr. ANDERSON. It can not all go into travel expenses, because you have only estimated \$7,400 for additional traveling expenses.

Dr. MOHLER. This item calls for an increase of \$15,000 altogether for horse and cattle mange, but only about \$3,000 will be required for the higher cost of traveling.

Mr. ANDERSON. How much are you spending for horse and cattle work now?

Dr. MOHLER. For this particular mange item?

Mr. ANDERSON. Yes, sir.

Dr. MOHLER. Altogether, about \$59,000 for horse and cattle scabies.

Mr. BYRNES. And this means that you want \$15,000 more?

Dr. MOHLER. Yes, sir. Most of the scab to-day among cattle and horses is in the Northwest and Southwest, where the severe droughts existed for several years. We had those sections pretty well cleaned up, but when these droughts came in New Mexico, Texas, Wyoming, and Montana the cattle could not get enough water to drink, certainly not enough to take a bath, and we had to stop our men from dipping those cattle because there was not enough water to make into dips. On that account the disease got the better of both State and Federal men. Heavy movements of stock from these stricken areas were absolutely necessary to save them, but they carried infection to many sections hitherto free, so that the disease prevails more extensively at the present time than for a number of years past.

FOR EXTENDING SUPERVISION OF INTERSTATE TRANSPORTATION OF LIVE STOCK.

Under paragraph C there is a request for \$35,000 for extending supervision of transportation of live stock. We have about 75 stockyards that are under supervision and there is a demand right now to have this work extended to several smaller cities. For instance, at Montgomery, Ala., we recently put in an inspector, and also one at Memphis, Tenn., and at several other places we have added inspectors.

Mr. BYRNES. What is the necessity for doing it?

Dr. MOHLER. This work is very important, as public stockyards are a dumping ground for diseased live stock from all parts of the

country, and the greatest vigilance must be exercised in making inspections for the detection of animals affected with any disease. If this inspection service is inadequate, it will result in the failure not only to locate centers of infection from which diseased animals are shipped, but will also permit the movement of such animals from public stockyards to country points, thereby setting up new centers of infection. An important feature of this work is the supervision of the immunization of swine for movement for purposes other than immediate slaughter. This activity requires the very closest supervision by skilled employees. In its absence swine suitable for feeder and stocker purposes either would have to be sold for slaughter at reduced prices or permitted distribution without treatment. The latter course would spread swine diseases all over the country, and either method would cause tremendous financial losses to swine producers.

Mr. ANDERSON. How many additional stockyards have been added to the list of those which you inspected in the last year?

Dr. MOHLER. About four, and several others are requesting it.

Mr. BYRNES. You want this \$35,000 to extend that work to other points?

TEST OUTFITS FOR SHEEP AND CATTLE DIP.

Dr. MOHLER. Yes, sir. The next paragraph refers to an increase of only \$2,000 for preparing a larger number of test outfits for making tests of the solutions which I just spoke about for dipping sheep and cattle. We also need a portion of it for making mallein and to carry on some studies with cheaper and better disinfectants. All this work will tend to improve live-stock conditions and prevent particularly the movement of diseased live stock from public stockyards.

Mr. ANDERSON. It has relation only to the stock that is shipped back into the country?

Dr. MOHLER. Yes; especially the feeders and stockers of all species.

Mr. ANDERSON. It does not involve inspection of cattle shipped for immediate slaughter?

Dr. MOHLER. No, sir. It is entirely a contagious-disease proposition for live stock that moves from the farm to the stockyards or vice versa.

Mr. ANDERSON. When you find animals that are prepared to be shipped out and are diseased, what do you do?

Dr. MOHLER. If they are affected with scab or something like that, we insist that they be dipped at the yards. If they are affected with anthrax, cholera, or something that we would not want to go further, we advise their immediate slaughter. It depends upon the nature of the disease.

FOR IMPROVEMENT, REPAIRS, ETC., OF QUARANTINE STATIONS, ETC.

In the next paragraph is a request for \$24,100 for the quarantine of imported animals. As it says in the statement, \$15,000 is required for improvement and repairs to the various quarantine stations that we have at Boston, New York, and Baltimore. As you probably know, there has been a great increase in the importation of pure-

bred cattle since the war, as it was impossible during the war to import any animals. The importers are criticising the department and everybody else because the facilities for quarantine at these points are in pretty bad condition. The buildings are becoming dilapidated, and unless we do something we will lose the buildings.

Mr. BYRNES. Did you do anything in the last year toward repairing the buildings?

Dr. MOHLER. No, sir; we did not have the funds.

Mr. BYRNES. How did you do it in previous years?

Dr. MOHLER. We always had an item of a few thousand dollars for construction purposes until the war occurred, and since then we have done little except what could be done by the man at each quarantine station. We bought a little paint and they have done some painting, but the wood is rotten and we will have to take out some of the lumber and put in concrete. One of these stations has 14 barns, so that you can readily see that this \$15,000 is already cut to the bone, and there is not much that can be done with that amount of money in repairing the barns. The station at Baltimore was turned over to the War Department during the war and they used it to store magazines and cartridges. We did not get the use of it again until after the war or until about a year ago.

Mr. BYRNES. In what condition did they return it to you?

Dr. MOHLER. I would not like to say. They promised to return it to us in the condition in which they found it, but that was not done. They put in fine concrete walks and electricity, but the concrete walks were over our water pipes and sewerage system, and the result was that we had to put new pipes down in order to get access to the mains. One good thing they did do was to give us electricity. But they tore down the stanchions, boarded up windows, etc., and we had to put the stanchions back again and do a number of other jobs besides.

FOR INVESTIGATING THE DISEASES OF TUBERCULOSIS OF ANIMALS.

The next item is No. 59, on page 48.

Mr. ANDERSON. Are there any increases in salaries there?

Dr. MOHLER. No, sir; there are no increases in salaries. You will find on the bottom of page 48 what these expenditures will include. Travel expenses, \$127,000; equipment and material, \$32,000; telephone and telegraph service, \$3,000; miscellaneous items, \$17,000. There are no promotions there at all. In fact, there is only one place outside of the statutory roll where we have contemplated promotions, and that is under the meat-inspection item, so that these other items can be disposed of with that general statement. This item No. 59 is for the investigation of tuberculosis of animals. In this item we have requested an increase of \$500,000 to extend the work, and also an elimination of the last two paragraphs on page 49, because of the fact that they are now general law.

Mr. ANDERSON. Let us get at the real situation if we can. How much have you spent this year for indemnities so far?

Dr. MOHLER. The Federal indemnity, up to November 30, 1920, amounted to \$171,973.87. That is an average Federal indemnity per head of \$31.31. And, you will remember, this is considerably more

than it was last year, when it was only about \$12. It merely shows that we are not getting as much salvage from the beef as we last year, so that our indemnity thus far has been increased \$31.31 per head. It also shows you how difficult it is to make an estimate of what the indemnity feature will be in an appropriation such as we have during the current year. For the past two years we have had a certain amount of money set aside by law for operating expenses and a certain amount for indemnities; last year it worked one way and this year it will probably work another way.

Mr. ANDERSON. That is five months?

Dr. MOHLER. Yes, sir.

Mr. ANDERSON. How much have you spent in salaries so far this year?

Dr. MOHLER. That statement I have not with me, but I can include it in the record.

NOTE.—The amount is \$199,915.34.

Mr. ANDERSON. What I am trying to get at is your probable expenditure from this fund for this year.

Dr. MOHLER. I will tell you, Mr. Chairman. The approximate estimate would be that the operating expenses will be used up and that there will probably be a little surplus in the indemnity fund. That is on account of the phraseology of the act at the present time, "of which \$800,000 shall be set aside for administration and operating expenses and \$680,440 for the payment of indemnities." There was \$100,000 of that operating expense which was immediately available when the bill passed last spring. Last year we spent a total of \$357,026.63 for salaries, and this year we estimate that the salaries will approximate \$425,000.

Mr. ANDERSON. Now, on what are you basing your total estimate of \$1,900,000 for this year, which is an increase of \$500,000?

Dr. MOHLER. The estimate is based on the fact that at the present time there are 5,000 herds in the 48 States waiting for the tuberculin tests to be applied to them. We can not keep up with the demand. It is one of the most important things that the department has undertaken. We have such a great increased demand over what we can supply that if we are going to endeavor to meet the States 50-50, as we started out to do two years ago, we will need this much more. Thirty-six State legislatures will meet this month, and there will be, from the information that I have been able to get, probably an appropriation of over \$4,000,000 from these 36 States. When we started out this campaign it was with the idea that we would meet the States on the 50-50 basis. At the present time we cannot do that. For this current year we have only been able to meet the States 33 per cent of the way. They have over \$2,300,000 appropriated this year.

COOPERATION WITH AND ACTIVITIES IN STATES.

Mr. ANDERSON. Are you working in all the States now?

Dr. MOHLER. No, sir; we are working in 45 of the 48 States. We are not working in Arizona, Nevada, nor in California, but the commissioner of agriculture of California was in my office a few weeks ago, and the State veterinarian met me in Chicago two weeks ago.

ago at the International Livestock Show, and they were both anxious to know how much we could give them if they got their appropriation through the California Legislature next month. They are going after a certain appropriation with the expectation that we will cooperate with them. I told them that we could not cooperate with them 50-50; that our promise could only be carried out from year to year; that we could only cooperate if Congress appropriates the money.

Mr. BYRNES. How do you cooperate, through the agricultural department of the various States?

Dr. MOHLER. Yes, sir. This is what we call regulatory work. The animals that react to the test have to be controlled through a regulatory power, so that it is done principally through the State veterinarians, live-stock commissioners, etc.

Mr. BYRNES. It is done through the State veterinarians?

Dr. MOHLER. Yes, sir. In your State we work through both the State Agricultural College and State veterinarian.

Mr. BYRNES. The amount of your expenditure depends upon the amount contributed by the State?

Dr. MOHLER. It started out in that way when we met them on the 50-50 basis.

Mr. BYRNES. I understood you to say that when the State had appropriated any very large amount you have been unable to continue on the 50-50 basis?

Dr. MOHLER. Yes, sir.

Mr. BYRNES. But it is based on the expenditure that is made by the State on the same percentage?

Dr. MOHLER. Yes, sir; we spend in each State a certain sum which is based on their appropriation.

Mr. BYRNES. You do not do anything unless the State cooperates with you?

Mr. MOHLER. No, sir; we try to put the same number of men into each State as the State has. Along this line let me call your attention to the fact that thus far this year our average Federal indemnity is \$31.31, while the average State indemnity is \$50.91. We spent \$171,973.87 for indemnities, while the States paid \$279,622.75 for indemnities, showing that they are paying more indemnity now than we are paying.

Mr. ANDERSON. Some States have laws that will allow them to pay more per annum than the Federal law?

Dr. MOHLER. Yes, sir. Now, in the State of South Carolina the average State indemnity per head is \$47.10 and the Federal average is \$24.66. In Minnesota the average State indemnity per head is \$27.80, and our indemnity is \$9.43, which is the lowest average indemnity reported.

Mr. ANDERSON. How is this work being done?

Dr. MOHLER. You may recall the history of this work. Two years ago we confined our tests entirely to pure-bred herds, and then the work became so popular that the owners of grade herds wanted us to take them in, so to-day we are working in both grade and pure-bred herds. Now, this is all voluntary work. We only take the herds where the owners agree to abide by the results of the tests. At first the work was scattered all over the State, but in the last 12 months a number of States have endeavored to concentrate the work in certain

circumscribed areas. Down in Mississippi one county voted to take up this work and get rid of tuberculosis in the entire county. There are two or three counties in Minnesota and one county in each of the States of Oregon, Washington, and Wisconsin where the work is being done throughout the entire county. In New York State the Farm Bureau resolved that every county in that State should take up active tuberculosis control work and provide necessary funds to cooperate with the State and Government. That is our idea of cooperation to get control over this disease. There is no use of working all around the State when we can get the cooperation of all the cattle growers in one county and then proceed to make it a tuberculosis-free community.

Mr. ANDERSON. When you are working in that way, do you not have cases of reinfection?

Dr. MOHLER. We have over 4,000 accredited herds on our list now, and of those 4,000 herds only 74 became reinfected. Most of those herds became reinfected on account of the failure of the owners to purchase clean animals. They bought wherever they saw a valuable animal that pleased them, and the result was that some of these cattle carried the infection to clean herds. Only 74 out of 4,000 herds became reinfected, which I think is a very small percentage, and in every case except five a very logical explanation was obtainable.

Mr. ANDERSON. It seems that much better results can be had by concentrating the work somewhere.

Dr. MOHLER. There is no question about it, but you can not compel certain parts of the county to go into it if they don't wish it. In fact, we have tried to avoid any compulsion in this work. It has been entirely one of voluntary action on the part of the owner.

Mr. BYRNES. You can not compel them, can you?

Dr. MOHLER. No; I can not.

Mr. ANDERSON. Only by State law.

Mr. BYRNES. I say you can not compel them yourself.

Dr. MOHLER. No, sir. For instance, in Massachusetts they had a compulsory law for tuberculosis work back in 1896 and appropriated \$300,000. They went around through the State and had animals tested and slaughtered but they got nowhere. They met with opposition, and in two or three years' time it was all over. But the outstanding feature of our cooperative tuberculosis work is the unanimity of both the producer and consumer in support of it. To the producer it will reduce the hazards of the industry and tend to place it on a more stable basis. To the consumer it will tend to improve his milk and meat supply. The work is growing faster than we can cope with it. This \$500,000 additional is going to touch only a small proportion of the increase in the demand.

Mr. ANDERSON. Are there any increases in salaries?

Dr. MOHLER. No, sir. The same statement I made awhile ago regarding promotions also applies to this item. The progress with which tuberculosis may be stamped out depends now entirely upon the funds available, because stockmen are ready and anxious to clean out the great white plague from their herds.

Mr. ANDERSON. I wish you would prepare and put in the record a statement of the progress that has been made in the work, the number of accredited herds, the number of herds that are awaiting tests. I think that is all I want.

Dr. MOHLER. And the number of once-tested herds that were found clean?

Mr. ANDERSON. Yes. You test them and then you have a retest?

Dr. MOHLER. Yes, sir. We do not put them on the accredited list unless they have passed two annual tests negatively or three semi-annual tests. We have a table prepared showing the progress of the work up to June 30, 1920, which I will insert, but our latest figures show 4,602 accredited herds. We have also 26,850 herds that have been tested once without showing any reactors. Therefore the nucleus for an additional number of accredited herds is very great. Now, in addition to that we are working in 40,548 other more or less infected herds, making a total of 72,000 herds altogether under the supervision of State and Federal men.

Table showing progress of tuberculosis eradication work.

State.	Herds.				Cattle tuberculin tested in cooperative work, year ended—			Cattle tested for interstate movement by approved veterinarians.
	July, 1918.		April, 1919.		July, 1920.		Number approved veterinarians.	
	Accredited.	Once tested, found free.	Accredited.	Once tested, found free.	Accredited.	Once tested, found free.		
Alabama.....	1	6	57	153	4,063	17,446	13,747	85
Arizona.....								13
Arkansas.....			15	53	130	495	2,286	42
California.....								137
Colorado.....								97
Connecticut.....	4	9	10	2	592	976	58	62
Delaware.....			3	45	71	1,917		6
District of Columbia.....	1		130	94	1,206			13
Florida.....			192	1,295	456			15
Georgia.....		13	36	180	4,463			41
Idaho.....			148	526	1,454			32
Illinois.....	2		55	293	2,508			347
Indiana.....	10	34	105	362	2,325	7		532
Iowa.....		2	43	377	197			19,625
Kansas.....			72	81		54		264
Kentucky.....		5	129	270	838			112
Louisiana.....	1	4	44	159	1,003			60
Maine.....	3	54	427	941	4,706			53
Maryland.....	3	18	116	261	3,171			52
Massachusetts.....	4	7	36	34	2,004			137
Michigan.....	1	46	62	133	3,789			372
Minnesota.....	75	119	250	904	12,138			361
Mississippi.....		15	643	248	1,94			81
Missouri.....			3	545	1			231
Montana.....		12	112	97	18,50			56
Nebraska.....			32	205				302
Nevada.....				287				17
New Hampshire.....		1	7	30	24	2,739		26
New Jersey.....		1	8	21	57	45		67
New Mexico.....					54			12
New York.....		1	45	186	19	7,211	27,431	400
North Carolina.....		24	255	1,045	9,10	6,972	11,457	75
North Dakota.....	40	183	694	1,036	14,88	14,062	23,400	178
Ohio.....	1	43	262	714	3,84	11,158	24,304	419
Oklahoma.....			7	228		1,404	11,001	40

These cattle were tuberculin tested under bureau supervision for interstate movement during the year ended June 30, 1920.

Mr. ANDERSON. Is there anything new on the transmissibility of tuberculosis from animals to human beings?

Dr. MOHLER. There has been nothing in the last twelve months except the report of a British physician at London, Dr. A. Stanley Griffith, who tabulated a series of over 1,000 cases that were studied in Great Britain by identical methods. I shall be very glad to put that table in the record. It shows that the bovine type of tuberculosis was found in about 37 per cent of children under 5 years old, in about 29 per cent of children between 5 and 10 years old, and in a smaller percentage of older children. It is a very interesting table but it is confined to the results of British investigators. The author does not endeavor to go into the statistics of Germany, France, or the United States. It is very short, probably two inches long, and it is self-explanatory.

Mr. ANDERSON. Put it in.

Dr. MOHLER. I thought you were going to ask me if there was any recent work done on tuberculosis vaccination. There has been nothing new on that line during the past year.

Dr. GRIFFITH. The author states that the main objects of the investigations were (1) to determine by the examination of unselected series of cases the relative proportions of the human and the bovine types of tubercle bacilli in different kinds of human tuberculosis; and (2) to ascertain the frequency of occurrence and the distribution in the human body of variant strains of tubercle bacilli.

The total number of cases of human tuberculosis now investigated in Great Britain by identical methods and reported on is 1,068, as follows:

Age periods.	Num-ber of cases.	Types of infection.						Percent- age of bovine infect- ions.
		Standard types.			Atypical.			
		Hu- man.	Bovine.	Mixtures (human and bovine).	In cul- tural char- acter- istics.	In virulence.		
					Hu- man.	Hu- man.	Bovine.	
0 to 5 years.....	221	133	76	2	2	3	5	7.55
5 to 10 years.....	312	208	81	1	5	7	10	29.45
10 to 16 years.....	150	119	17	.....	6	3	5	14.66
16 and upward.....	384	342	20	2	8	10	2	6.25
Total.....	1,068	803	194	5	21	23	2	0.7

¹ Including 1 case the age of which was not stated.

FOR THE ERADICATION OF THE SOUTHERN CATTLE TICKS.

Mr. ANDERSON. The next item is on page 51, item No. 60.

Dr. MOHLER. That item deals with the eradication of the southern cattle ticks. We have an appropriation of \$681,160 and we are asking for an increase of \$20,000. A large proportion of this increase is requested for the same reasons that we have already mentioned, namely, the fact that our boys can not get \$2 hotel rates any more in the South, and they now have to pay more money for railroad fare and automobile travel. We also want a few extra men to do intensive work in Arkansas and Louisiana. We have now cleaned up about 70 per cent of the area that was previously known to be tick infested.

Mr. ANDERSON. Will you give us the figures as to the total area originally infested, the area in which the tick has been destroyed, and what is remaining?

Dr. MOHLER. Yes, sir. The area infected July 1, 1906, was 728,365 square miles, while the area released from quarantine is 510,091 square miles. The area now infected on December 1, 1920, has been reduced to 218,474 square miles, a reduction of 70 per cent.

Mr. BYRNES. If the area has been reduced so much, then why the necessity for an increased appropriation?

Dr. MOHLER. For the simple reason that the area that remains infested is a harder area to clean up than the released area. In other words, it is easier to make a good impression on a disease at the beginning of any kind of an epizootic than at the tail end. Each 10-point average beyond 70 becomes harder and harder. We have not cleaned up very much in Florida and we have over 100 counties left in Texas. We could put our entire force into the eastern part of Texas and use them for two years before we would clean up the tick infestation in that part of the State. You will probably remember that the State of Texas has a law that divides the State into three zones. We are now working in the first zone and a part of the second zone, but the law does not call for any work in the third zone until 1922. Now, that third zone is larger than two or three other States put together. That is the reason we have not touched a lot of territory in the area indicated by this 218,000 square miles, not even with educational work. As an indication of the interest shown by the people in most of the ticky territory, I wish to call your attention to the fact that the various cooperating States and counties expended \$4.40 for each dollar expended by the department last year.

Mr. ANDERSON. I had hoped to live long enough, if I did not hope to stay in Congress long enough, to see this appropriation reduced, but I am getting discouraged.

Dr. MOHLER. I think 70 per cent is a mighty good record. I do not know that you will see the remaining 30 per cent entirely released in the next four or five years, but we are in hopes of having it cleaned up by the end of 1925. The \$681,000 that we have for this year is not going to go as far as it used to go and we ought to have a little increase.

Mr. ANDERSON. Well, it ought to go further next year than it did last year.

Dr. MOHLER. That depends on whether you are a good prophet or not.

Mr. BYRNES. Your railroad travel has increased. That is one thing.

Dr. MOHLER. Yes, sir; we have not been able to discount that in any way at all.

Mr. BYRNES. Of course, you can not discount it. What else has increased?

Dr. MOHLER. Well, automobile hire has gone up wonderfully in the last year. We have not been able to do anything to reduce this item. I was down in southern territory last May and I went to a town where I used to get a livery team for three to four dollars a day, but I could not get any kind of a horse conveyance. There was no horse livery in town. I had to hire a Ford, at \$4.50 an hour, to get where I wanted to go. I was there a year before and got around all day for that amount.

Mr. ANDERSON. You can buy a horse in every town to-day and make money.

Mr. BYRNES. You can buy them pretty cheap now.

Dr. MOHLER. There were no horses for sale or for hire in the town I was in.

Mr. BYRNES. You could not have got them last May, but you could get them now.

Dr. MOHLER. Several years ago you could get a hotel room on the American plan for \$2 to \$3 a day, and now you pay \$3 for a room alone. You have to pay for your meals in addition.

Mr. ANDERSON. Well, you are not eradicating the ticks down there at Atlanta?

Dr. MOHLER. Atlanta, Ga.?

Mr. ANDERSON. And in other large cities.

Dr. MOHLER. No; but we have a good deal of infested territory in southern Georgia, and our headquarters are in Atlanta, near the co-operating offices of the State. All but the office force are in country districts.

Mr. ANDERSON. A Congressman told me the other night that some one showed him a map of Florida and the splendid work that had been done in the eradication of ticks down there. The map was colored to show the parts where the tick had been eradicated, and these counties were mostly counties in which the large cities were located.

Dr. MOHLER. Why was he picking out Florida? He has selected the State in which we have done the least work, as we have only four clean counties, and they are down in the Everglades district. About 87 per cent of the State remains tick infested.

Mr. ANDERSON. One of these places was at Key West and that place had 27 cows.

Dr. MOHLER. Well, we do not want to stand on our work in Florida for our whole tick record. We started out in Florida two or three years ago with a great momentum. Representative stockmen came up here with the idea of getting a certain amount of help. They had their citizens' organizations keyed up and we started them off with a very strong force, but the thing went up in smoke and we have not been doing anything at all in the last six or eight months. I was down there a couple of months ago to see what kind of an understanding we could have with the authorities at Tallahassee. A new governor comes in the first of the year and the idea is to get an entirely new board and better cooperation than we have had under the present régime. There has been no work done in Florida except under the State laws. We are there cooperating with the State officials under the law that they have on their State statute books. The State law is very good if it were enforced.

Mr. BYRNES. Do these cattle catch cold in carrying them back after being dipped?

Dr. MOHLER. No, sir. The cattle have a latent form of the virus of the disease in their blood. They have been so frequently bitten by ticks that they develop a tolerance to the disease like you and I would have to malaria. Now, in traveling on the train or on a long trail, anything that would cause the cattle to lose their vitality or to lower their vitality may cause these latent germs of Texas fever to flare up and the cattle may sicken and even die, just like I might have a little malaria in my system without feeling bad until I was in a condition

of lowered vitality, and then the malaria parasites would get in their work and I would get another attack of the shakes. That is the only thing to that catching-cold theory. Those cattle are not immune. They have developed a tolerance, but they still have the bug in their blood. The end of this work is going to be harder than it was at the beginning, because we are getting farther south into a subtropical climate, and a good many of these ticks do not die off in those mild winters. They thrive and have generation after generation every month in the year in the far South.

FOR SCIENTIFIC INVESTIGATION OF DISEASES OF ANIMALS, INCLUDING MAINTENANCE, ETC., OF EXPERIMENT STATION AT BETHESDA, MD.

Mr. ANDERSON. The next item is on page 61, item No. 63.

Dr. MOHLER. This item is the one that covers scientific investigations of diseases of animals, including maintenance of the bureau's experiment station at Bethesda, the investigations of serums and anti-toxins, etc. We ask an increase of \$41,370.

FOR INVESTIGATION OF INTERNAL PARASITES OF HOGS.

This increase will be divided among several items. The first one is under clause A, \$12,500 for investigation of internal parasites of hogs. You will recall that last year I made a rather elaborate statement about the discovery that our zoologists had made with reference to the long white worm in hogs and the life history of this parasite. It is found in the larval stage in the lung of young pigs, which causes pneumonia and frequently loss of life, or else a stunting of the animals. We asked for that item at that time, but did not get it, and now we make the same request. We have made some investigations in central Illinois with the funds that we already have for these general scientific investigations, and we have been able to reduce the losses among pigs from these internal parasites by certain precautionary measures. We have been trying to get the work started down there on more than a laboratory scale. We would like to extend our findings to four or five different sections of the country under farm conditions.

Mr. ANDERSON. Now, when you are studying the same bug, why do you have to study him in four or five different places?

Dr. MOHLER. In some sections the climatic conditions are such that these parasites will probably flourish luxuriantly throughout the year. In other sections they may pass through a dormant stage or may succumb to winter conditions. The idea would be to try and find out the different conditions which would help to eliminate this serious and hampering limitation to the swine industry. We have certain conditions at Bloomington, Ill., but we do not know if they obtain in South Carolina. Just as I said about the ticks in the far South awhile ago, they breed there throughout the year, on account of the mild winter climate, and what we are trying to do now is to find out similar facts about these worms in order to attack their vulnerable point. And it is absolutely necessary to study these parasites and various other diseases in different localities. Here we have wonderful country from the Canadian border all the way down to the Gulf, and there are so many different kinds of climate, humidity, etc. There is nothing to indicate that what may be successful in one place will prove successful at another place.

Mr. ANDERSON. Have you found anything to use against this bug now?

Dr. MOHLER. Yes, sir; and it has worked very well under Illinois conditions. It was the same with hog cholera. This hog-cholera serum work we did at first near Ames, Iowa, and what we state then was that it would only apply to Iowa conditions, because we did not know until we found it out that it would apply to all the other States. Now, it may be that what we have found at Bloomington, Ill., will apply to the far West and down South, but we never will know unless we conduct the experiments.

Mr. ANDERSON. What are you doing at Bloomington?

Dr. MOHLER. We have the cooperation of about 15 farmers down there who have lost large numbers of pigs from this trouble. One man, who lost several thousand hogs the year before and was going to go out of business, was encouraged to stay in business because we believed we could stop these losses. He recently wrote a letter strongly favoring the work that we have done. He is making money now where he lost before.

Mr. ANDERSON. How do you go about it now?

Dr. MOHLER. We have one man down there. He makes post mortems on pigs that die in order to ascertain the cause of their death. When he finds this parasitic trouble he gives the owners certain information about the method of feeding the pigs and about the different precautions that must be taken. It is principally a question of hog management. The different pigs become infested from contaminated surroundings and the owner has to change their quarters at certain periods so that the hogs leave the parasites behind them at one point and go to another point where there is no possible infestation.

Mr. BYRNES. You think the condition of climate would affect the treatment of the disease?

Dr. MOHLER. Oh, yes. In the next item we ask for \$25,000 for the investigation of parasites of southern live stock.

Mr. ANDERSON. But that is a different parasite?

Dr. MOHLER. This next item covers all other parasites, but the first item, for \$12,500, is for the long white intestinal worm in hogs which, as we have discovered, spends a portion of its life cycle in the lung of the pig. We did not know about that portion of its cycle until recently. It causes the stunting of many hogs and the loss of a good many young pigs.

Mr. ANDERSON. I still do not understand why it is necessary to trace this bug out in four or five different places.

Dr. MOHLER. It is necessary to find out how long the eggs of the parasites would live outdoors under climatic conditions in Georgia to make precautionary measures effective there. It may be an entirely different story from what it would be in Minnesota. The vitality of the various forms in the life cycle of those parasites is different, according to the climate they are subjected to. We have an experiment station at McNeill, Miss., where we could do all the work for the southern zone, and we could have another station in Texas to cover the southwestern area. We plan to have three or four such stations. As I said last year, we will be able to show better results from this amount of money than from any similar amount of money for any similar purpose. We may issue a series of publications

to what we found in Illinois, and it may not apply to any other section except, where the climatic conditions are the same as in southern Illinois.

Mr. BYRNES. And that parasite is found all over?

Dr. MOHLER. Yes, sir. It is one of the most frequent parasites found in hogs, and heretofore it was not thought to have very much economic importance. It was well known that this parasite was taken into the hog as an egg with contaminated drinking water or feed, but it was presumed that this egg after entering the intestines would hatch out and develop into an adult worm without leaving the intestines; but our tests have shown that the embryo quickly leaves the intestines, passes to the liver and thence into the lung of the pig where it frequently produces pneumonia. If the animal recovers from the pneumonia, these embryos crawl up the windpipe into the throat, when they are swallowed and later develop into adult worms in the intestines.

Mr. BYRNES. What do you call it?

Dr. MOHLER. Ascariasis. It has a life cycle somewhat analogous to the hookworm.

Mr. BYRNES. That is another name for the hookworm?

Dr. MOHLER. Hookworm infestation is termed uncinariasis.

Mr. ANDERSON. Have you anything under this item that you can drop off?

Dr. MOHLER. That is what the committee did last year. It cut off some of the other items, and this one, too.

Mr. ANDERSON. We will have to do some more cutting next time and we want to do it in the right place.

Dr. MOHLER. This would be a very bad place, Mr. Chairman, because we ask for only \$12,500, and this amount of money will do more good to the swine industry than any other item containing a like appropriation.

FOR INVESTIGATION OF PARASITES OF SOUTHERN LIVE STOCK.

The next item is for \$25,000 for the investigation of parasites of southern live stock. This work on parasites has been started on a very small scale and what we are trying to do is to find out the cause for so much parasitism of the cattle, sheep, and swine, particularly in the South.

Mr. ANDERSON. Is there any particular epidemic of it now?

Dr. MOHLER. Yes; and it will become more prevalent as the ticks are eradicated from that section and the planters and farmers in the South start to bring in pure-bred live stock, which will be more susceptible to parasitism than the native stock. There has been considerable loss in the cut-over land section on account of the infected animals spreading parasites to the other live stock that have been purchased and put on that land. There has been very little work done along this line in that section. Of course, whatever affects the live stock in the South is going to affect the live stock of all other sections.

Mr. BYRNES. Why?

Dr. MOHLER. Because the live stock in the South will be purchased by people in other sections and shipped, say to Kansas City, St. Louis, or Nashville, where they will spread whatever infection they may carry. Other cattle going through these yards will pick up these various forms of parasites. In other words, the South is doing an in-

creased live-stock business and traffic in live stock spreads parasites broadcast. The amount of infection and the variety of parasitic community are constantly subject to increase by introduction of infected animals from other communities. Parasites flourish well in the South owing to the favorable climatic conditions and these parasites menace not only the live stock of the South, but of the country as a whole. The appropriation requested is for \$25,000 to work out some definite lines along preventive lines, as it is extremely important that some be discovered to control these parasites which are causing great loss and, in fact, threatening the live-stock industry in certain sections.

Mr. ANDERSON. This is just for internal parasites?

Dr. MOHLER. Entirely so. We can take care of the external parasites all right, but these internal parasites get into the bile ducts, the liver and into the bronchi of the lungs, where it is difficult for medicines to penetrate. It is our desire to conduct investigations to provide safe, practical, and effective treatments for such parasitic infections as nodular disease, stomach worms, hookworms, lung worms, etc., for which we have no satisfactory treatment at present.

FOR MISCELLANEOUS PATHOLOGICAL INVESTIGATIONS.

In the next item, item C is for \$3,870 for miscellaneous pathological investigations. This is to enlarge some of the smaller projects, such as the investigation of glanders, forage poisoning, anthrax, botulism, and other biological investigations.

FOR INVESTIGATION OF HOG CHOLERA.

The next item, No. 64, on page 62, covers work on hog cholera control and eradication, and also the study of various methods of its prevention and treatment, as well as the supervision of the production and sale of hog-cholera serum, antitoxins, and various analogous products. Last year we had the misfortune to have this item cut down almost \$250,000, and we necessarily had to reduce our hog-cholera field force from 140 veterinarians to 54. This year we are asking that the amount of money that was appropriated last year be appropriated for next year.

Mr. ANDERSON. You are asking what?

Dr. MOHLER. That the amount of money we had in this item last year be put in for the next year. This year we received a reduction of about 40 per cent. The present amount for the current year is \$410,000, and we are asking for \$678,925, which will give us the same amount for hog-cholera control next year as it was last year. With this sum we would be able to resume the hog-cholera work in the field on the same basis as last year, when it was so satisfactory and successful.

Mr. ANDERSON. How is this hog-cholera work being conducted?

Dr. MOHLER. Well, up to the 1st of July it was being conducted in a very satisfactory way. We had reduced the number of outbreaks to a minimum. We had been able very frequently to jump on the first case in a community and stop the outbreak from spreading to adjacent farms, and the result was that instead of having thousands of hogs lost from hog cholera as high as 144 hogs per thousand, as it was in 1918, it went down to 38 per thousand last year, but since the 1st of August there has been a great spread of cholera in a number of States.

Mr. ANDERSON. Where?

Dr. MOHLER. In Iowa, Kansas, Nebraska, Kentucky, Wisconsin, Illinois, North Carolina, and Michigan. For instance, in Kansas 400 outbreaks occurred in October, an increase of 1,000 per cent over the same month in 1919. In Michigan 488 outbreaks have occurred between July 1 and November 30, 1920, with a loss of over 6,000 hogs. In North Dakota 216 outbreaks have occurred since July 1, 1920, the greater portion of which occurred since October 1. In Iowa outbreaks are not confined to any particular section, and from reports received at the office it is found that there is hog cholera prevalent throughout the entire State. Many of these cases were reported from communities where it was formerly unknown. In Wisconsin the disease has been more prevalent during the last three months than it has during any like period since our cooperative work began. We have a statement from Indiana, where the outbreaks were most severe in the east-central part of the State, and the loss was serious, as it was impossible for an inadequate number of inspectors to take the proper measures for control and suppression of the disease.

Mr. ANDERSON. I think Indiana has a serum plant of its own, has it not?

Dr. MOHLER. I think so. Mr. Christie can tell you definitely.

Mr. CHRISTIE. They are manufacturing serum in Purdue.

Mr. ANDERSON. Are the States doing anything in this work?

Dr. MOHLER. Yes; the States are doing some work, but we have about 54 men to cover the entire country, and the result is that we have not more than 2 men, in some cases 3 men, to cover a single State, to cooperate with the States in controlling this disease. It is certainly a very important thing to look after, because when hog cholera strikes a community it is apt to spread broadcast and cause great losses.

Mr. BYRNES. What do you attribute this spread to?

Dr. MOHLER. Simply because we have not an adequate force to control it, no systematic and concentrated method of attack. We had the machinery and we had everything systematized and we had an organization, but on the 1st of July we reduced our force to correspond with the appropriation and now the disease is getting away from us.

Mr. ANDERSON. Were you not doing some intensive work in some counties?

Dr. MOHLER. Yes; we were doing intensive work in a number of counties.

Mr. ANDERSON. How many?

Dr. MOHLER. We were working in about 12 different counties.

Mr. ANDERSON. How many men did you have in each county?

Dr. MOHLER. We had sometimes two of our men, but they were always supplemented; sometimes the county had additional men and sometimes the State.

Mr. ANDERSON. Then you did not have any more men practically available for jumping around over the country looking after outbreaks here and there than you have now?

Dr. MOHLER. Yes; we had 140 last year and at the present time we have only 54 men.

Mr. ANDERSON. How many of those 140 were engaged in intensive work in these counties?

Dr. MOHLER. We were working those 140 men in 33 States particularly on Statewide work. A large majority of those men were in the corn belt.

Mr. ANDERSON. What I want to know is how many of these 140 men were engaged in intensive county work?

Dr. MOHLER. There were not many men engaged in intensive county work last year. We only did that in 11 or 12 counties, and we only had two or three men of our force doing intensive work in any county, but certain States had some of their own men engaged along these lines. At present we are not doing anything of that kind.

Mr. BYRNES. What caused your force to decrease—any educational work other than that you have described?

Dr. MOHLER. Yes; a part of our work was along educational lines in cooperation with the agricultural colleges. The county agents would organize meetings and our specialists would give lectures and demonstrations. It frequently happened that one or more hog raisers in the audience would have something in their herds that they did not know anything about; they did not know what it was. Our men would then go to these farms and tell the farmers that it was hog cholera or something else, and in the former case they would recommend the treatment with hog cholera serum. Now the farmers are not buying much serum as an insurance for their hogs, but are waiting until some of their neighbors' hogs or their own hogs get the disease before they vaccinate. In other words, we have not enough inspectors on the job to look after the interests of the swine breeders in the various States.

Mr. ANDERSON. Are not these outbreaks of hog cholera more or less sporadic? Do they not occur now and then from year to year, more in some years than in others?

Dr. MOHLER. Yes, sir. They run in cycles. Last year we had the thing going down hill. We never had a smaller loss than last year from hog cholera. We had only 38 hogs per 1,000 to die from hog cholera.

Mr. ANDERSON. That is the last calendar year?

Dr. MOHLER. Yes; and this year it would have been much easier to keep pushing it down and keep it down than to get in front of when it is starting to come back, and now it is coming back rather lively, according to our reports.

Mr. ANDERSON. What success did you have with this intensive county work?

Dr. MOHLER. We had very satisfactory results because the outbreak never got beyond the point of the original infection. We got the farmers interested; we got them to realize the danger; and in a number of those counties we jumped on the outbreak as soon as it occurred and there were no secondary centers of infection. The adjacent farmers were not involved at all.

Mr. ANDERSON. How many men have they got in the different States?

Dr. MOHLER. That is pretty hard to say. Some of the States have taken over the employment of some of our men and are giving them the same salary that we were giving and holding them on this line of work for the State, while other States have just let the matter drift along. There are a number of States that have appropriated considerable sums of money. For instance, Florida, during the last fiscal year, expended over \$30,000. Illinois apparently has not spent anything specifically. The following list shows the various State expenditures:

Amount of funds expended by each State for hog-cholera work, fiscal year ending June 30, 1920.

Alabama.....	\$5,000	Mississippi.....	\$1,700
Arkansas.....	8,000	Missouri.....	10,000
Delaware.....	5,000	Nebraska.....	3,550
Florida.....	30,000	New Mexico.....	600
Georgia.....	23,000	North Carolina.....	6,000
Idaho.....	2,000	North Dakota.....	1,500
Indiana.....	20,000	Oklahoma.....	10,000
Kansas.....	3,000	South Carolina.....	8,000
Kentucky.....	6,000	Tennessee.....	1,800
Louisiana.....	40,000	Texas.....	3,000
Maryland.....	4,750	Virginia.....	3,000
Michigan.....	2,500	Wisconsin.....	4,000

No stated amount in California, Colorado, and Ohio.

There is relatively little money being expended by the States at the present time. As in a great many other lines of work, the various States like to have some kind of a leader and they can get more money from their legislatures in that way than when we drop out of the work.

Mr. ANDERSON. This leader business is all right, but when we undertake to put the whole thing on our shoulders, I am not in favor of that.

Dr. MOHLER. I think you are entirely right. I think we ought to cooperate with the States in the control of the disease, but only when they endeavor to help themselves. There have been more serious outbreaks of cholera in the past season than in the previous year, and now there is an inadequate force to look after it. When an outbreak occurs it spreads easily, and unless there is somebody to cope with it, it goes like wildfire. In Maryland they arranged with the bureau to take about 50 per cent of our force and pay for the men out of their own funds to help control outbreaks in that State.

Mr. ANDERSON. I wish you would put in the record a statement showing the decrease in hog cholera in the last four or five years, if there has been a decrease in the outbreaks, and also for the last few months. It does not seem to me, in view of the fact that you have had a full force up to the 1st of July and these outbreaks were continuing to decrease up to that time, that you could quite substantiate your proposition. In that case outbreaks were due to taking your force out of the field.

Dr. MOHLER. You understand that the greatest prevalence of hog cholera is in the fall of the year, in September and October, when they start to feed corn in the open, when the exposure to infection is the greatest. We are not comparing the amount of July infection in 1920 with July, 1919. We are comparing the conditions this fall, during the season when the outbreaks are always most numerous, with the conditions that obtained last fall. For instance, in Kansas there was a 1,000 per cent increase in October, 1920, over the same month in 1919. Now, if I endeavored to compare the losses in July or August with the losses in some other different month, it would not be fair. But it is certainly fair to compare a certain season of one year with the same season of another year, or one month of one year with the same month of another year, if it is not a border month.

Mr. BYRNES. You say it is generally worse in the fall?

Dr. MOHLER. Yes; and that is the reason why I have compare 1-month period in October, 1919, with another 1-month period October, 1920. It is absolutely a fact that the disease is on the crease this fall. We had a meeting of the United States Livest Sanitary Association in Chicago the fore part of this month there were State officials present from about 44 States. They v very much interested in this subject and agreed with the view have expressed. In fact, several swine breeders whom I met w in Chicago were very insistent that they should come down here make a plea for an increase in funds for hog cholera control wor

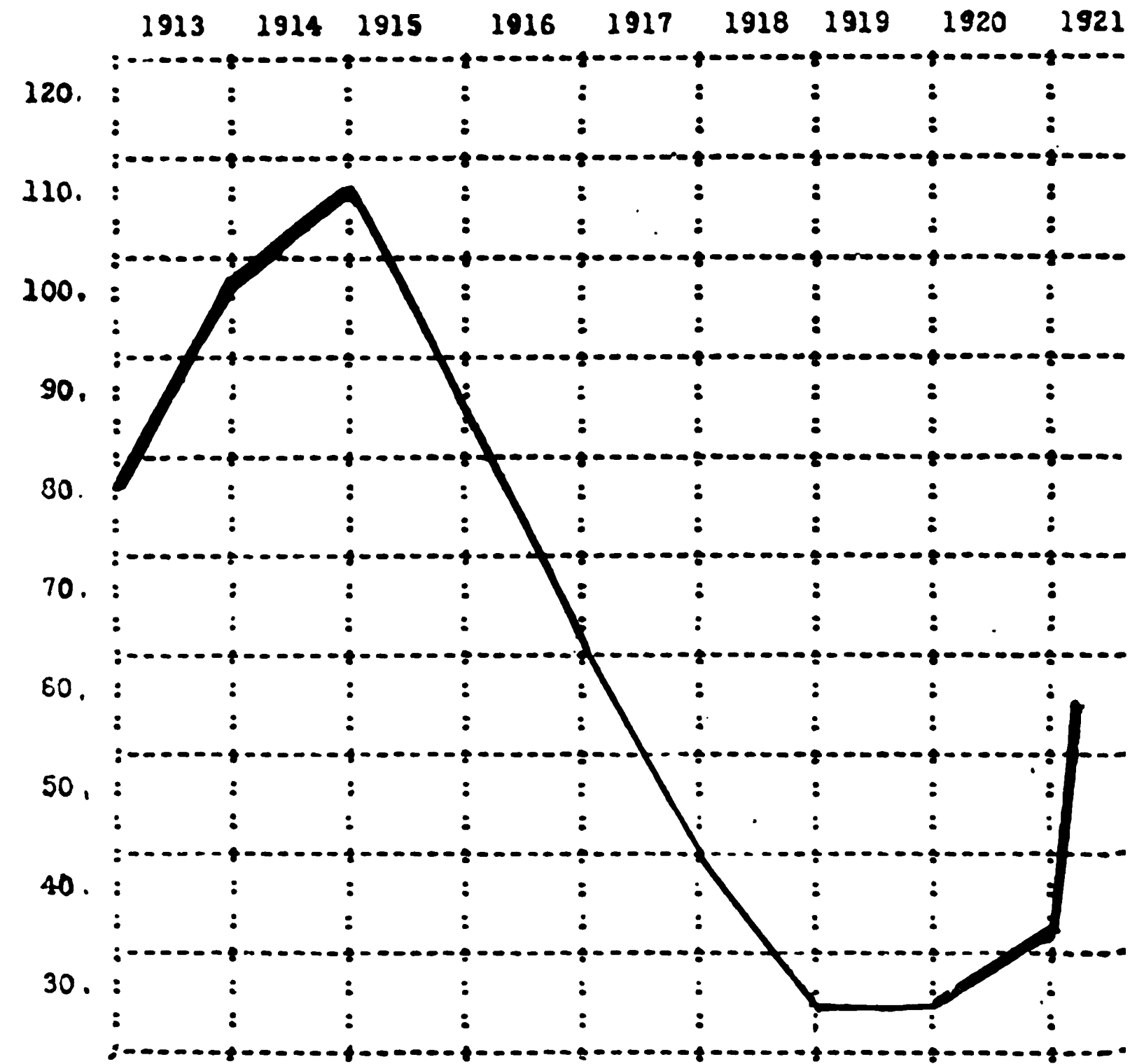
Mr. BYRNES. Well, there are always people who are perfectly w ing to have things done for them.

Dr. MOHLER. That is true. However, I do not know any ot way to save the citizens of our country so much pork, if I might it, than to control such a deadly disease as hog cholera.

Mr. BYRNES. Well, if there were a remedy to prevent it, most a veterinarian could administer it. There might be more reason this item than there is.

Dr. MOHLER. There is only one reason, and that is that a dise like hog cholera knows no State lines. It is here to-day and dc in Virginia or West Virginia to-morrow. No State can cope w this disease single handed for the simple reason that it is jump from one place to another overnight.

LOSSES PER 1,000 OF HOGS FROM HOG CHOLERA IN STA WHERE THE BUREAU IS COOPERATING IN THE CONTROL . THE DISEASE, DURING FISCAL YEARS—



Number of outbreaks reported since July 1, 1920.

[Includes only those reported to our men. More outbreaks occurred than are known to them.]

Michigan.....	488
Kansas.....	400
North Carolina.....	485
North Dakota.....	216
Wisconsin.....	180

NOTE.—These are States in which hog raising is confined to a certain portion of the State and where our men have opportunity to learn definitely of the number of outbreaks. In other States, such as Iowa, Missouri, Illinois, Indiana, Ohio, it has not been possible to ascertain the exact number of outbreaks owing to the limited force, notably in Iowa and Missouri, where only one bureau veterinarian is assigned. Such men are too busy in the field trying to assist the farmers to keep track of the number of calls they can not answer. A general statement of conditions follows.

BRIEF EXTRACTS FROM REPORTS OF INSPECTORS IN CHARGE OF HOG CHOLERA WORK, RELATIVE TO INCREASES IN THE DISEASE SINCE JULY 1, 1920.

Indiana.—Outbreaks were most severe in several counties in the east-central and southwestern parts of the State. The losses from these outbreaks were serious, as it was impossible with the inadequate number of inspectors available to adopt the necessary measures for the prompt control and suppression of the disease.

Iowa.—Outbreaks are not confined to any particular section of the State, but from reports received at this office showing the shipment of cholera hogs upon which investigations have been made, it is found that there is cholera infection prevalent throughout the State. Many of these cases were reported from communities where formerly such events were almost unknown and all of such cases acting as sources for other outbreaks in that neighborhood.

Kansas.—Reports 400 outbreaks of hog cholera in October, 1920, an increase of 1,000 per cent over the same month in 1919.

Kentucky.—Under date of December 2, report says: The last few months reports of cholera are becoming more frequent and some very serious outbreaks have occurred.

Michigan.—Reported December 3, 488 outbreaks from July 1 to November 30, loss over 6,000 hogs. State requested two additional veterinarians. Funds would not permit.

Missouri.—Report says in part: "From past experience it is evident that enough hog cholera is present to make it necessary to use every precaution in order to prevent a heavy loss of hogs from the disease during the year 1921."

Nebraska.—Reports that the disease (hog cholera) has been more prevalent than during the past three or four years, and the losses suffered in proportion to the number of outbreaks have been greater than during several years past.

North Carolina.—Reports 485 outbreaks, involving 1,935 herds, with a loss of over 7,000 hogs. Two inspectors in the State can not answer all calls for assistance.

North Dakota.—There have been 216 outbreaks reported to the inspector in charge since July 1, 1920, the greater portion of which occurred since October 1.

Oklahoma.—Hog cholera has appeared in a very virulent form; hundreds of herds were infected and on account of the virulency of the disease, thousands of animals have died. Calls piled up in the office, but many of these could not be answered.

Texas.—If there should happen to be an epidemic of hog cholera, the present force would not be able to handle the situation on account of the large area and the scarcity of practicing veterinarians.

Wisconsin.—Reports show a total of 180 outbreaks. The disease has been more prevalent during the months of September, October, and November than it has been during a like period since the inception of cooperative work in this State.

Illinois.—From our observations and reports received from different parts of the State, hog cholera is more prevalent and more wide-spread than for several years past. In some localities, we have found upon investigating reports of outbreaks that large numbers of hogs have died from the disease, or the owners have shipped the hogs to market regardless of age or condition.

TUESDAY, DECEMBER 21, 1920.

FOR ENFORCEMENT OF THE VIROUS-SERUM-TOXIN ACT.

Mr. ANDERSON. Doctor, I think we were on item 74, page 62, when we adjourned last night, the hog cholera item. You had not discussed item b of your note, \$14,260, for the enforcement of the virus-serum-toxin act.

Dr. MOHLER. We had just completed the discussion of the hog cholera control appropriation and there remains of the general item clause b, which requests \$14,260 for the enforcement of the virus-serum-toxin act.

You understand, Mr. Chairman, this money is requested in order to have an increased force for the work we are doing in the establishments where these hog cholera vaccines, serums, and analogous products are being produced. Last year we had an increase of nine different establishments, and we had to spread our previous force over these extra establishments producing these products, so the old plants were not given the same amount of inspection they had received in past years. And, in addition (it is the same story), some of this increase will be for the extra charges for travel, subsistence, the increased cost of rental, and things of that kind.

ADDITIONAL VETERINARY INSPECTORS, LAY INSPECTORS, AND CLERKS.

Mr. ANDERSON. I notice in the note here you say:

To cover the new work properly, 13 additional veterinary inspectors, 23 lay inspectors, and 4 clerks will be needed.

I was just wondering how you were going to get them out of \$14,260.

Dr. MOHLER. The idea is to reduce the number of the higher-grade places, like the veterinary inspectors, and to put in their places a larger number of the smaller-paid men—a class of employees we term lay inspectors. In that way, we are equalizing the amount of the expenditures, but we will have more man power and not such an expensive overhead. This work originally started with veterinary inspectors in charge of all lines of the work but we have gradually put veterinary inspectors in charge of the plants in a supervisory capacity and transferred some of the veterinarians doing routine work to establishments in the meat-inspection service, replacing them with the lower-salaried lay inspectors.

Mr. ANDERSON. Now, is that so? In 1920, when your appropriation was substantially what you are asking for now—no; it was less; nearly \$100,000 less—you apparently had on your rolls 24 men and last year you apparently had 135 men, due to a reduction in the appropriation.

Dr. MOHLER. From where are you reading, Mr. Chairman?

Mr. ANDERSON. I am reading from your tabulated list in connection with this item.

Dr. MOHLER. Page 64?

Mr. ANDERSON. Yes. And you are estimating this year for 24 employees. That does not indicate any likelihood of there being a larger number of the lower paid employees and a smaller number of the higher-paid employees.

Dr. MOHLER. You will notice that the last column there, "Expended 1920," is the only column that is really a true statement of fact. The others are simply approximations. The 135 veterinary inspectors in that second column you have just referred to are on this year's roll, not last year's, and the number is constantly changing. Again, we have made an approximation in the 1922 column of the number of employees needed if we secure the entire appropriations requested for this item 64.

Mr. ANDERSON. And your approximation puts on 73 additional persons at \$2,000. Those certainly are not lay inspectors. That is \$2,240 with the bonus.

Dr. MOHLER. Where is that?

Mr. HARRISON. On page 63, Doctor.

Mr. ANDERSON. You have inspectors, on page 63, in the \$2,000 class, estimated, 1922, 75. For 1921 you had 2. That is an increase of 73 in that class.

Dr. MOHLER. That must be an error, because we have never had that number of veterinary inspectors in the entire Virus-Serum Division, nor is it anticipated to have that number of veterinaries in that work next year.

Mr. ANDERSON. I know, Doctor, but we are entitled to know what you are going to do; and all through these estimates there is error after error which nobody can figure out; it has absolutely no relation between your notes and your tabulated estimates—none whatever.

Mr. HARRISON. You understand that the table refers to the entire increase?

Mr. ANDERSON. I understand that.

Mr. HARRISON. Not merely to the \$14,260.

Mr. ANDERSON. I understand that. But even at that, there is no relation.

Mr. HARRISON. You say there are errors between the notes and the tables throughout the estimates?

Mr. ANDERSON. They look to me like errors.

Dr. MOHLER. I see the trouble you are having now, Mr. Anderson; you are mistaking the virus-serum item we are discussing—this section b, with the hog cholera control item in section a, which we passed last night. This column you are referring to takes into consideration the additional veterinary inspectors I requested last evening in discussing the hog cholera control work. You are not pointing out the number of men for the virus-serum-toxin work at all. These 75 veterinarians would be used for hog cholera eradication work and it is a mistake if you think there are 75 veterinarians to be employed in the virus-serum work.

Mr. ANDERSON. I do not have that notion.

Dr. MOHLER. We have been discussing, of course, the virus-serum work and then you point out that we are asking for 75 veterinarians at \$2,000 a year. These men are not for the virus-serum work at all. They are for the hog cholera control work, for which we are asking an increased appropriation of \$254,665; while the item I am discussing is section b, for which we are requesting a very small increase.

Mr. ANDERSON. Suppose you tell me how you are going to get 13 additional veterinary inspectors, 23 lay inspectors, and 4 clerks out of 1920

Dr. MOHLER. I have explained that we are going to make a number of transfers and reduce the number of high-grade veterinary inspectors, filling their positions with a greater number of the lay inspectors, whose salaries are much smaller. Moreover, this serum virus work is seasonal in character, and many of these inspectors we are requesting will be used only part time during the busy season when they are badly needed. And again I want to lay stress on the point that the number of veterinarians to which you have referred in that second column does not include the number of veterinarians in this virus-serum work at all.

Mr. ANDERSON. The only lay inspectors, apparently, in this tabulated list are 10 at \$1,320.

Dr. MOHLER. Yes, sir; that is practically so. We do not have any of these lay inspectors in the hog-cholera control work. These lay inspectors are all for the work in the virus-serum division, and in this latter work we have only asked for an increase from \$188,540 to \$202,540—an increase of \$14,260—while in the other item you brought up, Mr. Chairman, we are asking for an increase of \$254,400 for the control of hog-cholera outbreaks throughout the 48 States. And there is where we propose to put in these 75 veterinarians \$2,000 a year. So I do not want to see any confusion between the two items. They both come under the one group, No. 64, on the subject of hog-cholera investigations, etc., but we have tried to separate the component projects so that the increase for hog-cholera control work will be entirely distinct from the increase for supervising the preparation of virus, serum, and analogous products. And I think you will find, if you go through these various estimates, that the manner in which we propose to spend these amounts of money we are asking for is explained very carefully in these columns so far as we can possibly approximate the use of these sums. As I told the committee yesterday afternoon, the number of veterinary inspectors we had in the hog-cholera control work during the year ending the 1st of July, 1920, was in the neighborhood of 140; while during the present year we are only employing 54.

Mr. ANDERSON. How many do you expect to add to that 54?

Dr. MOHLER. We would like to bring the number up to the 140 men that we had last year, when the appropriation was practically the same as we are asking for next year.

I may say that since these estimates for the virus-serum division have been presented there has been a falling off in hog-cholera serum production. There has been a great reduction in the price of hogs and a consequent decreased demand for hog-cholera serum compared with that for previous years. But we have anticipated that this will last only for a short period, and that the production of hog-cholera serum will come back to usual proportions in the spring.

TRAVELING EXPENSES.

Mr. ANDERSON. How did you arrive at the figure of \$181,250 for traveling expenses as against \$100,000 allotted this year?

Dr. MOHLER. The way we figure that is on account of the increase in the number of men. We will have, as I stated just a moment ago, an increase in the force on hog-cholera control work of probably

or 90 men. They are all on a traveling basis, and they will have to go to the various farms and travel extensively throughout their communities.

Mr. ANDERSON. You won't have over 80 men on the basis of your estimates, apparently.

Mr. MOHLER. They are all estimated here in the second column, and the total number, with the exception of the three lowest places, will be engaged in the two lines of work, including hog-cholera control and virus-serum inspection. There is another project here, Mr. Chairman, as you will notice, which covers our research work on hog cholera and which calls for \$29,520. We are not asking for any increase for that project this year.

Mr. ANDERSON. What was your appropriation in 1920?

Dr. MOHLER. It was something over \$600,000 for this group of three projects.

Mr. ANDERSON. In 1920?

Mr. HARRISON. \$641,045.

Dr. MOHLER. That was for the year ending June 30, 1920?

Mr. ANDERSON. I am not talking about the current year.

Mr. HARRISON. For 1921, the current year, it is \$410,000. Last year it was \$641,045. There is a table at the top of page 63.

Mr. ANDERSON. According to your statement, then, you did not expend the total amount in 1920?

Dr. MOHLER. No; we did not, for the reason that when the current bill was passed last spring we were working under full pressure, and I knew we would have to stop our work considerably after the 1st of July. Instead of making a big cut right after the 30th day of June, I gradually reduced the work in the spring months in order not to have a perpendicular drop on the 1st day of July, 1920. So that we gradually reduced our force right from the time this present bill was passed last spring, and consequently we turned a small surplus back to the Treasury.

Mr. ANDERSON. What are you doing now on the investigation of hog-cholera work?

Dr. MOHLER. The present investigation is being conducted by the Biochemic Division along lines they have been following for the last two years, to ascertain whether or not these other diseases so frequently mistaken for hog cholera have any great economic importance. They are working on what is known as hemorrhagic septicemia, necrotic enteritis, so-called mixed infections, and other related diseases, which have frequently been mistaken for hog cholera. We have a farm near Ames, Iowa, with an experiment station on the place, where two men work right along on these problems. We are not asking for any increase in this particular project, for the reason that \$29,250 has been sufficient in the past, and we are not planning to extend the work. We have our own farm and we have the same force that we have had for several years. They do not have any traveling to do to any extent.

The results of this work, together with their studies on the various modes of spread of hog cholera have been published in several different magazines in the past two years, and it has received very favorable comment both in this country and abroad.

CONTAGIOUS ABORTION WORK.

Mr. ANDERSON. I want to ask you a question that is not related to this item; I presume it will come up later. How are you progressing with your work on contagious abortion?

Dr. MOHLER. That was one of the items, you will recall, which was cut considerably for this year. We reduced our forces on abortion and also reduced the number of cattle that we had in our experiment station at Bethesda, Md. We have still continued to work with herds in the vicinity of Washington, Maryland, and Virginia and we are working on different forms of serums, vaccines, and bacterias, with the view of ascertaining what effect they will have on exposed and infected animals.

Mr. ANDERSON. How much money has been spent on that project now?

Dr. MOHLER. It is less than \$40,000.

Mr. HARRISON. It was \$47,000 and the appropriation was cut about \$20,000 last year.

FOR THE INVESTIGATION, TREATMENT, AND ERADICATION OF DOURINE AMONG HORSES.

Mr. ANDERSON. We will take up now the item on page 64, item No. 65.

Dr. MOHLER. This item No. 65, Mr. Chairman, refers to the investigation, treatment, and eradication of dourine among horses. Dourine among horses, as you will recall, is a venereal disease, and has been spread very considerably in certain of the Western and Southwestern States. It is spread by infected animals during the breeding season. This work started 6 or 7 years ago with an appropriation of \$100,000, and we have gradually worked it down until for the current year we have \$65,200. Since these estimates were submitted, in September, we have received sufficient information to warrant us in reducing this item by about \$10,000.

At this time last year, you will recall, we had about 2.4 per cent of infection among the 45,000 animals we tested, in North and South Dakota, Wyoming, Montana, Arizona, New Mexico, and some in Nebraska. This year the disease has been reduced to 1.3 per cent and the remaining infection is largely on the Indian reservation. We have more trouble in cleaning up the Indian reservations than anywhere else. And I think we could very well stand a cut of \$10,000 in this item. Furthermore, I believe that inside of three years this item will be wiped out. We are making very good progress and the results are very encouraging.

Mr. ANDERSON. Let us take up item 66.

Dr. MOHLER. This item will be discussed by Mr. Rawl.

MEAT INSPECTION.

The next item is on page 67, item 68. This is our meat-inspection project, and we are making for an actual increase of \$309,020, which would bring this item up to \$1,200,200. You know the history of meat-inspection work of the bureau. The present work is being conducted in 892 establishments and in 262 cities.

There is a typographical error there. It says 150 cities; it should be 262 cities in the United States. And we have inspected a large number of animals—more this past year than we have for any other year prior to 1919 in the history of the meat-inspection service.

Mr. ANDERSON. It is not likely that will be true next year?

Dr. MOHLER. No; under present conditions, probably not, although you would be surprised to see the way the hogs and sheep and cattle are being practically dumped in the stockyards at the present time in order to get loans liquidated. But the increase we are after is to get 50 additional veterinary inspectors for both the ante mortem and post mortem meat-inspection work, 150 lay inspectors for the processing departments of the packing houses, and to promote between 50 and 60 employees who are greatly underpaid. These men have been working for the bureau for a long time. They start in at such a low salary that it is very difficult to get them promoted speedily enough to hold them by giving a fair wage. These employees are largely in two groups. The veterinary inspectors start at \$1,500 plus a bonus of \$240, and the lay inspectors begin at \$1,080 plus the \$240 bonus. The turnover in the meat-inspection service in the last 18 months has been over 30 per cent and we have had considerable trouble in keeping sufficient experienced men to carry on the work. There are two of our lay inspectors here this morning who voluntarily came on from Kansas City last week and they have left a statement with me. If you have no objection I would like to have it inserted in the record, and with your permission they would like to refer to their own conditions.

Mr. ANDERSON. Do they wish to make an oral statement?

Dr. MOHLER. If you will permit them to make an oral statement they would greatly appreciate the courtesy. Here are about four pages of the statement they would like to have inserted.

Mr. BYRNES. To what does this statement refer?

Dr. MOHLER. It refers to the character of the work they are doing, the qualifications and responsibilities of the lay inspector, and what they are accomplishing for the health of the Nation.

(The statement referred to is as follows:)

MILLIONS SPENT TO MODERNIZE ESTABLISHMENTS.

Since the passage of the meat-inspection law of June 30, 1906, millions of dollars have been spent by the meat-packing interests in the United States in modernizing their establishments to comply with the requirements of that law. In every department, many buildings, most of the equipment and facilities and the premises have been altered or changed in some form to meet sanitary requirements and to insure wholesome meat and products. These enormous expenditures have resulted through the efficient administration of the law by the Department of Agriculture through its employees in the Bureau of Animal Industry. Naturally, the burden of this regulatory work falls to the men on the job. Namely, the veterinary inspectors and the lay inspectors.

DUTIES OF LAY INSPECTORS.

Some of the lay inspectors assist the veterinary inspectors, while others are assigned to the duties of supervising the curing, canning, packing, and other preparation, handling and marking of meat-food products, examining such articles to detect the unsound or unfit conditions, assisting in enforcing the sanitary requirements, and performing various other duties, and as a result of their activities, have been instrumental in a very large measure in bringing out the necessary and beneficial improvements which have been made through

the United States. It requires men with the exact technical knowledge, progressive ideas, initiative ability, and sound judgment to cause the meat-packing interests of this country to spend such sums of money, for they would not spend it for useless purposes. Such employees should receive compensation commensurate with their responsibilities.

The meat business of this Nation has become a vast industry of applied science, of which, in a practical way, the bureau inspectors must of necessity be masters.

Many of these inspectors were originally packing-house men of unquestioned ability in their various lines of work, many having been foremen and experts in the preparation or handling of some particular kind of meat or meat-food product, and quite familiar in many branches of packing-house work. Many are young men with high school or equivalent to high-school education, who were being trained by the packers for official positions, who cast their lot with the Bureau of Animal Industry, fully believing the bureau offered a better future.

The work of the lay inspector begins immediately after the veterinarian has concluded the post-mortem inspection and has passed the carcass as free from disease. They follow the carcass and parts thereof, even to the smallest pieces, throughout the various processes in the many stages of preparation in the different departments, until the product is placed in the channels of trade.

While only a portion of this meat is inspected and passed to the public in a fresh state a few days after the time of slaughter, it is constantly under the supervision of the bureau inspector, who not only passes it as to its wholesomeness but guarantees to the public that as long as the meat remains under his charge it is handled in a clean and sanitary manner.

A greater portion, however, especially of pork, remains in the packing houses for sometime after and is either cured, frozen, manufactured, or prepared into some meat food product. It is during these intricate and complicated processes that this employee's practical experience, alertness, good judgment, knowledge of Government rules and regulations and sense of smell are put to a test. Only an expert in this line with his long practical experience and knowledge of conditions as they will present themselves during these stages of processing can detect things that would render the product unwholesome or otherwise unfit for human food.

He must be familiar with all kinds, classes, grades, and conditions of meat and meat food products. He must know thoroughly the details of and be able to follow closely and intelligently every product derived from cattle, swine, sheep, and goats which enter interstate and foreign commerce. He must know all the labels, chemicals, and dyes forbidden and permitted in the handling and sale of these products. He must also be an expert on sanitation as well as meat hygiene. As a public servant he stands as a guard between the importers, exporters, and producers of fresh and cured meats and meat food products and the meat consumers of the world.

The lay inspector is not a professional man, nor is his vocation registered in the catalogue of science, but he is an expert trained in the school of experience, where every act is the practical application of scientific principles which have passed the experimental stage.

His labors are none the less scientific. He is skilled in the details of handling, curing, processing, and preparing of thousands of varieties of products emanating from the packing houses, the combinations of permitted chemicals in their proper proportions to effect the safest cure, the combination of meat products, chemicals, and spices to form a wholesome article of food, the proper temperatures and equipments for curing, processing, rendering, storing, cooking, smoking, and their necessary and proper conditions based upon the discoveries and combinations are made almost daily, and these the lay inspectors follow out to the minutest detail that he may not be remiss in his duties.

The question might be asked, why is it necessary for this employee to have this knowledge? By having this knowledge he is able to readily detect any fault or malpractice in the handling and preparing of meat products and to know when fraud and deception is intended or where there is a miscarriage in the process which might be concealed in the finished product.

Not a pound of domestic or imported meats, except those that are exempted under the law, enter the channels of interstate or foreign commerce until it has been inspected and passed by the bureau employee as sound, wholesome, and otherwise fit for human food. Even the dressed carcasses, which have

been passed by the veterinarian, free from disease, are again subject to reinspection by the lay inspector to ascertain if any condition has arisen which would render it unsound, unwholesome, or otherwise unfit for human food.

To properly perform these duties these employees must be thoroughly trained in the technology of the meat industry. They must possess a high degree of intelligence and executive ability. They must be diplomatic, level headed, and judicial in temperment, because they must constantly deal with hard-headed business men, managers, superintendents, and their lieutenants, than whom they are very often much better informed as to the details of the business, yet these men receive from \$1,000 to \$5,000 more per annum than the lay inspector.

There is no vocation in the civil service which is more hazardous and injurious to health than that of the inspector of this bureau. This is due primarily to the racial and abrupt changes in the temperatures which these employees must undergo in the discharge of their official duties. In the rendering, refining, cooking, and other processing departments the temperatures range from 90° to 150° F. There is scarcely a department which does not have its chill rooms, where the temperatures range from 30° to 40° F., while the temperatures in the freezers go far below zero. Often the inspector's clothing is saturated with moisture and steam and many times a day he must in this condition enter these chill rooms. He has neither time nor opportunity to change his wet clothing for heavier, dry, and warmer materials, because it is not the wish of the department to impede operations or that the processes and sanitary conditions be overlooked.

There are others who must toil daily in cellars, where the temperatures range from 34° to 38° F. with frequent changes to branding rooms, where the sweet pickle and dry salt meats are inspected piece by piece for bruises, sours, and other unsound conditions, and are branded with red-hot irons. By this process the trade label and inspection legend are applied. Here the temperatures often range from 80° to 100° F., and from here he must again return to cellars without an opportunity to change clothing.

There are many inspectors who must perform their duties in tank houses and casing departments, where the heat is excessive, and the characteristic odors of the packing house abound. The work is so distributed that these public servants must endure these exposures if they would efficiently enforce the meat-inspection laws. No mortality records are at hand, but these employees are seldom free from colds and rheumatic conditions.

Government regulatory business is as exacting and as important as that of any private enterprise and demands strenuous and close application from each employee. The modern packing house is geared up to the maximum speed and capacity of output. Under the meat-inspection law of June 30, 1906, the inspector must go at the same speed. It is not sufficient that he inspect the finished products, but he must closely supervise each step in the process and sanitary conditions from the time the dressed carcass leaves the killing floor until it is cured or processed, labeled, packed, and shipped. Some idea of the magnitude of the work may be gained when it is known that from 30,000 to 100,000 pounds of product is inspected and passed, piece by piece, by one inspector in a single day.

Mr. ANDERSON. My recollection, Dr. Mohler, is that there was an increase provided for in the 1920 bill. Can you give us a statement of what was involved? That was an increase in the salary of the inspection force. My recollection is that was an increase of \$120 per man for a certain number of the employees. I do not remember whether it covered all of them or not.

Dr. MOHLER. I think you are entirely correct. It was a flat increase of \$120 for all the men in the meat-inspection service. As you state, that was two years ago. And last year there was an increase of a very small sum, about \$24,000, put in the bill.

Mr. ANDERSON. What grade of employee do you expect to promote with the increase you are asking for here?

Dr. MOHLER. As I stated, the meat-inspection force is made up of the veterinary inspectors, the lay inspectors, and the clerks. We

expect to take care of the clerks if our statutory roll recommendations become law. They are practically all on the statutory roll, so that they would not come under this item. That leaves two groups of employees, veterinary inspectors and lay inspectors, to be benefited by this increase. We have about 2,500 men in the meat-inspection service. There are about 750 veterinarians, 150 clerks, and the remainder lay inspectors.

Mr. ANDERSON. What I am trying to get at is what class of employees you intend to promote—whether it is these higher-paid employees.

Dr. MOHLER. No, sir; it is not.

Mr. ANDERSON. Or whether you are raising your entrance salary.

Dr. MOHLER. We would like to raise our entrance salary, but that matter is not up at the present time. What we are trying to do is to promote the lower-salaried people, the lay inspectors, who are making around \$1,400 to \$1,500, and the veterinary inspectors, making around \$1,600 to \$1,800, and to put them up to a living wage in comparison with the outstanding line of work they are doing. I may say we are going to have considerable trouble in the future in getting veterinary inspectors. The University of Pennsylvania has only four students in the freshman veterinary class, Cornell has only six, and that condition obtains in the veterinary colleges all over the United States, the number of men in the freshmen classes being extremely small. Four years from now we will be wanting to draw on the graduates of the present class and they won't be available, largely because this Government, which is the biggest employer of veterinary service in the world, has been very slow in meeting the salaries of other professions.

Mr. ANDERSON. I have gone over this list somewhat hurriedly, but as near as I can figure it out (I may be slightly in error), in 1917 the average salary of your inspection force, including both lay and veterinary inspectors, was \$1,267. On the basis of your estimates of this year the average is \$1,583, exclusive of the bonus. That is approximately, on the basis of the inclusion of the bonus, an increase of \$500 since 1917 in the average salary of your inspection force. Now, will you give us a little more information as to the necessity for these 150 additional inspectors?

Dr. MOHLER. The reasons for these extra 150 lay inspectors, Mr. Chairman, are practically the same as I gave you for the virus-serum estimate. We have in the last year as a matter of necessity taken the vacancies caused by the veterinarians leaving us and placed lay inspectors in some of these positions which did not require professional knowledge, under the supervision of experienced veterinarians. The lay inspectors to-day are doing more important work than they have ever done in the Bureau of Animal Industry along meat-inspection lines. We have a number of vacancies now in the veterinary force at a number of the stations where we are having difficulty in getting veterinarians to fill the places. What we are trying to do is to have a larger number of technical men, called lay inspectors, take the routine places of the veterinarians so we can adjust our work to meet the shortage of veterinarians. It will require about 150 lay inspectors to go into these different places where inspections are necessary. There are a number of places of minor importance.

course, where we have nobody making inspections at present, but where a few years ago we had good inspection.

We have also been forced to reduce the veterinary force on ante-mortem meat inspection, and it is our desire to put back some of these men as soon as funds permit.

Mr. ANDERSON. How many additional plants have you taken on in the last year?

Dr. MOHLER. The number of plants would probably be about 20, but the number of cities has been much smaller. The last city I recall is Phoenix, Ariz. There are several cities waiting for inspection that we have not been able to grant inspection to.

Mr. ANDERSON. How many?

Dr. MOHLER. I recall one up in Connecticut and another down in Kentucky that have been after inspection for some time. I do not recall the exact number now, but there are two or three others. This tuberculosis work we are doing has been coupled up very closely with the increased demand for meat inspection. The work on tuberculosis requires that the condemned animals be slaughtered under Federal supervision. In certain States like North Dakota, which formerly had no Federal-inspected plant, the State officials have been instrumental in getting the owners of a packing house to request Federal inspection. The same is true in that case I spoke of in Connecticut. This is entirely due to the work being done on tuberculosis. The States want Federally inspected plants where condemned animals can be slaughtered under Federal supervision. This morning I received a letter from Baton Rouge, La., requesting Federal inspection on account of the tuberculosis work.

Mr. ANDERSON. Are you doing any investigational work, research work, under this item?

Dr. MOHLER. Yes, sir; there is a small amount of research work being done by Dr. Dorset, of the Biochemic Division, for which he is allotted a small amount of money from this fund.

Mr. ANDERSON. How much?

Dr. MOHLER. \$11,500. The primary object of that work is to determine the wholesomeness and food values of various kinds of animal products and studies in connection with the vitamine content of meats, cold storage, and new methods of processing meats.

Mr. ANDERSON. There is likely to be a falling off of the animals coming to market next year, is there not?

Dr. MOHLER. The indication would be that way, surely, from the way they are coming in now.

Mr. ANDERSON. In view of that fact, do you think you are going to need an additional 150 lay inspectors?

Dr. MOHLER. Yes, Mr. Chairman. If we expect to keep up this meat inspection force to the standard at which it has been kept, it is necessary to have these extra men. Of course, we can not anticipate what the conditions will be. We do not know what Congress is going to do. If there is going to be a protective tariff placed on importations of meats and live stock, it may be a great stimulus for increased production. I can not prophesy what the result is going to be, but I am satisfied if some action along those lines is taken there won't be such a decrease as what the prospects right this minute

would indicate. It depends entirely on what effect the action of Congress at this particular session will have on the farmers of the country.

Mr. BYRNES. Do you think it will encourage them to engage in live-stock production?

Dr. MOHLER. It will encourage those who are already in not to get out. Under the present conditions the men are getting out fast. That is what the chairman referred to, I think—prices being so low that live-stock raisers are taking their losses and liquidating. I know a number of ranchmen who have done that.

Mr. ANDERSON. There certainly is a prospect of a very great reduction of the live animal production plant at the present time.

Dr. MOHLER. That is true.

Mr. ANDERSON. And if nothing occurs to stop that tendency there will be a diminishing flow of animals to the market for two or three years at least.

Dr. MOHLER. That is very true now, but I have faith something is going to be done here in the next two or three weeks that will stop that tendency and put the farmers on their feet and encourage them to produce just as much live stock as they have in the past. It is just a prophecy, but I am satisfied the vast majority of establishments which we have under inspection to-day will be under inspection two years from now. They may not handle 85,000,000 animals, but they will have to be open and we will have to have inspectors there. So that it is very immaterial to the bureau whether one plant slaughters 1,200 animals a day or 200 a day; the 200 animals going to that plant will require our inspectors to be present. The only difference is, our inspectors would not be working quite as hard as when the plant is killing 1,200 animals a day.

Mr. ANDERSON. I note you lay a great deal of stress on the fact that during last year 85,000,000 animals and nearly 8,000,000,000 pounds of meat and meat products were inspected. You would not do that unless you thought the volume of animals and meat products going through the plants had some relation to the work you are doing and the number of inspectors you have to have.

Dr. MOHLER. It certainly does have some relation to the amount of work we are doing, and our men have worked 10, 11, and 12 hours a day to perform that service. That is a good deal more than some men work who are employed in the Government in Washington. These two lay inspectors will tell you how many hours they are working in Kansas City to-day. And during this particular season of the year when animals are slaughtered until late at night, they work a great many more hours in a day than eight. I have been out to the western plants when they were slaughtering up until 9 and 10 o'clock at night and our men had to be on the job.

Mr. ANDERSON. You know a good many of them now are not working over three days a week, do you not?

Dr. MOHLER. No; I do not know that.

Mr. BYRNES. Why do you not bring these men in and put them in the department sometimes in the hope their spirit will become contagious?

Dr. MOHLER. That might be a good idea.

FOR THE ERADICATION OF FOOT-AND-MOUTH AND OTHER CONTAGIOUS DISEASES.

On the item of foot-and-mouth disease I would like to say a few words: it is on page 302, item 11. You will remember up until the current year we have had a fund of \$1,000,000, which we have always considered as an insurance fund for use in case of an outbreak of the foot-and-mouth disease in this country. Never a penny of that appropriation has ever been expended. The last session of Congress decided to reduce it to \$50,000. I would just like to call the attention of the committee to the fact that at the present time there is more foot-and-mouth disease in South America and in the European countries than there has been for the last decade, and it is marvelous that some traveler or some piece of merchandise or some other method of carrying the disease does not bring that infection to this country. It is just a few weeks ago that an animal at Jersey, for the first time in the history of the Jersey Island, developed the foot-and-mouth disease. And this morning I received a cablegram from our representative in London of three more outbreaks that have occurred in England. And even worse than the foot-and-mouth disease is the disease known as rinderpest, which is now rapidly spreading over Poland and Belgium. This item would cover an outbreak in this country not only of the foot-and-mouth disease but of any of the Old World plagues like rinderpest.

Mr. BYRNES. How much remains now in the various appropriations which have been made available for this work from year to year?

Dr. MOHLER. We have a balance of a little less than \$500,000 under the appropriation made in 1916 of \$2,500,000 that is still available; but in case Congress adjourns on the 4th of March and does not come back until a later period, and something like this would occur during the adjournment, we would have a serious fight to hold this disease in check with such a small amount as a half million dollars, or this \$50,000 here.

Mr. BYRNES. Was any of the \$50,000 spent last year?

Dr. MOHLER. No, sir; there has never been a penny of this item spent for anything. The \$1,000,000 has been turned back every year, and I hope this \$50,000 will be turned back this year, as it certainly will be turned back unless there is an outbreak of this disease in this country. We have never spent a penny of this appropriation and never intend to, as it is virtually a protection fund, an insurance, against the spread of this disease among the live stock in this country in case of an outbreak. That feature is very well taken care of by the language in the bill, which states that it is only to be used in case of an outbreak.

Of course the disadvantage I can see from your committee's standpoint is that, if it is included, it means so much more in the appropriations. If it could be put through as a joint resolution in some way you men know more about than I, so that it would be available to the department only in case of an outbreak, that would be entirely satisfactory to us. But under present conditions the amount of \$50,000 in the current bill is a mere bagatelle; it would not amount

to anything in preventing the spread of a disease like the foot and mouth disease.

Mr. ANDERSON. Of course, I have not in mind that \$50,000 would be adequate to meet an emergency if it were to arise; but I have in mind the remainder of the fund appropriated in 1916, and the \$50,000 was only carried to keep the item alive; not with the idea it was adequate to cope with an outbreak of the foot and mouth disease.

Dr. MOHLER. The present condition throughout the world is that countries which have not been infected for many years are now infected badly, and not only with the foot and mouth disease but with rinderpest and lymphangitis, which really would be more troublesome, if they should come to this country, than the foot and mouth disease has been.

Mr. MAGEE. If you had an epidemic of this disease, Congress could readily appropriate sufficient money to meet the emergency.

Dr. MOHLER. If Congress was in session, that could happen; but the history of the three past outbreaks has been they all occurred when Congress was not in session and, if it had not been for the wisdom of the Secretary of Agriculture, Mr. Houston, in 1914, there would have been a bad calamity occur as a result of that particular outbreak. We had no money at all for foot and mouth disease at that time and other funds appropriated for other purposes had to be borrowed temporarily.

Mr. MAGEE. The probability is Congress will be continuously in session for some time to come.

Dr. MOHLER. That would be very pleasant in the case of some outbreak like this; we could call on you very promptly. But we never know when a disease like this is coming in this country. As I stated to the chairman a few moments ago, this is not an appropriation to be used except in that emergency. We have had it since 1916 and have never spent a penny of it and never intend to spend a penny of it except in case of an outbreak.

Mr. MAGEE. What have you had since 1916?

Dr. MOHLER. The appropriation of \$1,000,000 as an insurance fund in case of an outbreak of a disease like the foot and mouth disease. This emergency fund we have this year——

Mr. MAGEE. This has been reduced?

Dr. MOHLER. It was reduced last year from \$1,000,000 to \$50,000. Of course that does not mean a thing; \$50,000 would not last 10 days.

Mr. BYRNES. The real question is whether or not you will have an insurance fund?

Dr. MOHLER. Yes, sir.

Mr. BYRNES. If you do not have an insurance fund, you might well cut the \$50,000 out?

Dr. MOHLER. This is supposed to be for security, but there is no security there at all.

Mr. BYRNES. As the chairman says, your security now lies in the balance remaining in the \$2,500,000 fund, so that you have an insurance now of \$500,000.

Dr. MOHLER. A little less than that. We are using that appropriation right along in the investigations at stock yards and at places where we have reported outbreaks of the foot and mouth disease. These reports sometimes occur two or three times a week.

Mr. MAGEE. You do not think it wise under the present natural conditions of the country to appropriate large amounts of money to meet possible contingencies when Congress is here to take immediate action to meet any emergency that might arise?

Dr. MOHLER. I think I would be derelict in my duty if I did not point out to you the danger of an outbreak in this country of the foot-and-mouth disease now spreading through South America, eastern Europe, and certain parts of England, France, Spain, and Italy. I certainly would be derelict in my duty if I did not point out to you the danger of this disease being brought over here, and if you do not give us some insurance fund of this kind and it should ever come again to these shores it will be extremely difficult to combat the infection. It will spread so fast that by the time Congress gets into action the disease will have spread over many States, costing many times the insurance requested. We had that condition in 1914.

Mr. MAGEE. That hardly answers my question. Read my question, Mr. Stenographer.

(The stenographer read the question, as follows:)

You do not think it wise under the present natural conditions of the country to appropriate large amounts of money to meet possible contingencies when Congress is here to take immediate action to meet any emergency that might arise?

Dr. MOHLER. No, sir. I do not think it is advisable for large amounts of money to be tied up in contingencies, but I do think it very wise to have this one appropriation for this Bureau of Animal Industry.

Mr. MAGEE. If we appropriated all the amounts you distinguished gentlemen from these different departments ask us to appropriate, the people who pay the taxes probably would not only have to give you all the moneys they have in the banks and in their stockings and stowed away in other places, but also to give you all that they could probably borrow at the banks, and then there would probably be a very large deficiency to supply the needs. Now, I do not speak in any spirit of criticism, but it seems to me at this time everyone ought to appreciate we have to get along the best we can until we get rid of this pending deficit carried by the Secretary of the Treasury, with temporary loans, amounting to several billions of dollars, absorbing all the moneys that are available, restricting the extension of credits, and curtailing everything else, and which seems to me will be a continuing menace to all kinds of business until it is wiped out, and I do not know of any way to get rid of it except to economize in our public expenditures and to pay up or else to issue bonds in some way to meet this current deficit. We have a problem here you can not very well avoid.

Dr. MOHLER. That is all very true, sir.

Mr. MAGEE. It is not a question of partisanship; it is a question of how we can all put our shoulders to the wheel and meet it. And it seems to me—I may be in error—we ought to make these appropriations not along the lines of what we would like to see, but to meet existing conditions and do the best we can.

Dr. MOHLER. There is just one point about this item, Mr. Magee: you will appreciate the fact if we had sufficient money available at the beginning of an outbreak you could save a million dollars by

being on the job promptly, whereas if we had to wait for two weeks for Congress to appropriate this money, after the disease first appears, we would have to have several times as much.

Mr. MAGEE. Certainly; that is all right, but you might have another epidemic of the "flu."

Dr. MOHLER. That is true.

Mr. MAGEE. And you might have a thousand contingencies that might arise.

Dr. MOHLER. That is true.

Mr. MAGEE. Any reasonable man would say they should all be promptly met; and if they arise, we will have to meet them.

Dr. MOHLER. But here is an annual continuation of an appropriation made four years ago, and we have never spent a penny of it thus far. It was reduced in the current year from \$1,000,000 to \$50,000. We had better wipe out the \$50,000 entirely than to have it there and give the live-stock industry of the United States a feeling of security that we have money available, in case of an outbreak of a dreaded disease, with which to fight it.

Mr. BYRNES. I agree as to the \$50,000 that it does not amount to anything, and you might as well strike that out of the bill, but you have available out of this \$2,500,000 fund a balance of \$500,000.

Dr. MOHLER. A little bit less than \$500,000.

Mr. ANDERSON. What is the amount?

Dr. MOHLER. It is about \$483,000.

Mr. BYRNES. Now, agreeing with everything you say—I agree with most of it—as to the desirability of insuring the live-stock industry against the disaster that would result from an appearance of this foot-and-mouth disease, presuming that it should appear, could you not use that \$500,000 immediately?

Dr. MOHLER. Yes, sir; we could.

Mr. BYRNES. And it would be of great service to you?

Dr. MOHLER. It certainly would. It is the only anchor we have now, because this other appropriation does not amount to anything.

Mr. BYRNES. The \$50,000 does not amount to anything, but the \$500,000 does amount to something?

Dr. MOHLER. Yes, sir; it does.

Mr. BYRNES. So that you have that insurance to the live-stock industry. They know they have not only that \$50,000, but they also have this fund of \$500,000 available?

Dr. MOHLER. That is true.

Mr. BYRNES. What you really want is to have the \$1,500,000?

Dr. MOHLER. We are not using this insurance fund; we have not touched a penny of this \$1,000,000. But we have spent from \$20,000 to \$25,000 a year for the investigation of these reported outbreaks. Ever since the outbreak in 1914 there have been numerous requests from the stock owners to "come out and see my cattle; we have the foot and mouth disease." There were reported outbreaks on several farms in South Dakota and Colorado recently and we had to send two or three men to those points. It was reported that they had some very bad cases of foot and mouth disease, but it turned out not to be foot and mouth disease at all. It is this kind of expense that we charge up to what remains of the \$2,500,000 appropriated in 1916.

Mr. BYRNES. But that expenditure will not greatly reduce the amount that will remain available to you as an insurance fund.

Dr. MOHLER. It is gradually being reduced by the yearly expenditures. The first year after the outbreak we had a great many more wild goose chases than we have now, and they are gradually being reduced.

PAY OF INSPECTORS ENGAGED IN MEAT INSPECTION.

STATEMENT OF MR. A. H. STEVENS, PAST SECRETARY OF THE BUREAU OF ANIMAL INDUSTRY, LAY INSPECTORS' NATIONAL ASSOCIATION.

Mr. STEVENS. I am past secretary of the Bureau of Animal Industry, Lay Inspectors' National Association, representing the lay inspectors throughout the United States engaged in meat inspection.

In support of the estimates requesting an increase of the appropriation for meat inspection, Dr. Mohler has just submitted a statement covering the qualifications and duties of the inspectors. You will find on careful examination of that report that our work is technical and may well also be termed as hazardous. It is not clerical and it is not labor.

There is an opinion that prevails among a great many people who are not familiar with the meat industry that anyone who has a keen scent can tell good meat from bad meat. Now, that is true in some cases of fresh meat, but if you take cured meat after it is cured (and there is some 75 to 90 per cent of the pork products that go to the trade as cured meat), unless a man is familiar with all the processing of pork, and how they cure it, he is not competent to tell the good from the bad. We had the late Representative Borland go through one of the largest Kansas City plants about five years ago. Mr. Borland prided himself upon having a keen scent. He expressed a desire to inspect some hams. We got out five or six good hams and five or six bad hams in a ham drier, and we showed him where to go to inspect them, and he called the bad hams good and the good hams bad.

There is a certain stage in the processing of ham that what is known as under cure gives them a very obnoxious odor, and one not familiar with the process of curing would condemn that ham which, as a matter of fact, had nothing wrong with it and if let alone would come out all right. I simply make that statement to show you put green men in there they would insist on condemning good meat and perhaps let a lot of bad meat get away from them. We feel men competent to do this work should be paid salaries commensurate with their duties and not based merely on the cost of living or of existence, as it has been with some of them. I have a prepared statement here which I would like to submit showing the condition of those houses at the time the meat-inspection law was enacted and their condition to-day. It is a very lengthy statement if you desire to examine it. These conditions that existed prior to 1906, you understand, were no fault of the department or

officials of the department. They had no law at that time to cope with those conditions.

Mr. ANDERSON. The conditions, at that time, if I remember, were pretty well exploited over the country.

Mr. STEVENS. Yes. That all occurs in your Congressional Record here.

Mr. ANDERSON. The committee will be very glad to examine it and, if necessary, put it in the record.

Mr. STEVENS. I understand that the bill introduced in the Congress last Saturday by Representative Lehlbach, containing the suggested recommendation of your joint commission on the reclassification of salaries, provides a salary for us much greater than what we could receive under this increased appropriation. So that we are not asking, really, for as much as your joint congressional committee has recommended we should receive. In 1916, the Agriculture Committee of the House, by unanimous vote, I believe it was, recommended the passage of what was known as the Lobeck bill, which gave us then some 15 or 20 per cent more than what this joint commission has recommended, and at a time when the living cost had advanced only some 9 points over what it was previously.

Mr. BYRNES. What are you now receiving?

Mr. STEVENS. \$1,500.

Mr. ANDERSON. That is your basic salary?

Mr. STEVENS. Yes, sir. The joint commission has recommended a salary of \$1,740 for our places.

Mr. MAGEE. Does that carry the bonus?

Mr. STEVENS. No, sir; without the bonus.

Mr. MAGEE. I mean they get the bonus?

Mr. STEVENS. We get the bonus; yes.

Mr. BYRNES. So you really get \$1,740, then?

Mr. STEVENS. Yes, sir; just what the joint commission has recommended. Men doing work for the packers of the character we are doing receive \$45 and \$60 per week.

Mr. ANDERSON. That must be very recently.

Mr. STEVENS. No; I can recall cases where they got \$40 and \$50 a week 10 and 12 years ago.

Mr. ANDERSON. I know that 10 and 12 years ago the scale of salaries in the packing plants was very, very low, indeed.

Mr. STEVENS. They were for labor, but they were not for the men who possessed the qualifications that we do.

Mr. BYRNES. You say that is the entrance salary. What is the average salary?

Mr. ANDERSON. The average salary, as near as I can figure it, according to the 1922 estimates, including the 150 new men at \$1,080, will be \$1,583, without the bonus.

Mr. STEVENS. You are taking in the lower grade inspectors there, what we formerly termed assistants, who are not inspecting the cured meats.

Mr. ANDERSON. That would reduce the average and not raise it. Leaving those men out, the average is about \$1,600, without the bonus.

PAY OF LAY INSPECTORS ENGAGED IN MEAT INSPECTION.

STATEMENT OF MR. THOMAS NOONE.

Mr. NOONE. Mr. Chairman and gentlemen, at a national convention of the lay inspectors held in St. Joe, I was appointed to come down here, and at this time I will read a few extracts from this letter, with your kind permission, that I sent to the Secretary:

I wish to state at this time that the Government had no more loyal servants during the trying times and ordeal that we have just passed through, as is evidenced by their support of every bond issue, campaign war fund drives, long hours of work, and the millions and millions of tons, aye, billions of tons, of food products prepared under the supervision of the best trained and ablest veterinarians in the world to-day, assisted by the lay inspectors. Those food products were shipped all over the world, and that without one breath of scandal or complaint through the public press. This is a record we all can feel justly proud of.

Further down here I give the cost of living in 1911 and up to 1919.

Mr. ANDERSON. From where did you get that?

Mr. NOONE. I got it from the statistics in the daily press in our city, sir; covering all that period. Then I continue:

The above are the common necessities of life that must be used and range from 100 per cent to 300 per cent increase over the 1911 cost.

I then show the market quotations from 1911 to 1919. Now, with regard to labor in the packing houses in 1911, common labor at that time was receiving 15 cents per hour and, in some instances, 12½ cents per hour. In 1919 they received 42.5 cents, while at present they are receiving 53 cents per hour. That is the common, uneducated labor that does nothing but common trucking in the packing house. I hold here in my hand a card where their case was brought again before Judge Samuel Alschuler, in the city of Chicago, a month or so back. The packers had able lawyers there contending with the employees, and yet in the face of the evidence produced by those lawyers and those packers, Judge Alschuler, in his judgment, saw fit to recommend to these men a bonus, covering from July to the present month of 5 per cent, which I understand amounts to over \$14,000,000 that has to be paid by the packers to their common labor.

In 1911 foremen received salaries ranging from \$20 to \$30 per week, and since then have been increased to \$35 and \$50 per week with an additional bonus at Christmas time of from \$50 to \$250, and as an additional inducement, many corporations are paying for death and accident policies for their men.

You will note that the annual salary foremen receive ranges from \$1,820 to \$2,600.

This does not include the bonuses received around Christmas time.

The increase asked for by the lay inspectors is a just one, judged from the increased cost of living, and the present standard of wages, and it is the general opinion that wages will never be near as low again as they were previous to the war, nor will the cost of living ever be so cheap.

Pardon me just a minute if I refer to the fact that Mr. Byrnes yesterday, I noticed, said that the high cost of living was coming down. That is true in regard to some things, but for the necessities of life that we have to use every day throughout the entire year it is not so.

Mr. MAGEE. Is not that true with respect to a good many necessities?

Mr. NOONE. Not if you consider this suit of clothes I bought four or five years ago, sir. Where we have to buy a suit of clothes or where we come to get a necessary of life which we are using every day—for instance, we used to get gas for 30 cents a thousand.

Mr. MAGEE. Take sugar.

Mr. NOONE. That is true in regard to sugar.

Mr. MAGEE. Take wheat and flour.

Mr. NOONE. Our 5-cent loaf of bread that we got in 1911 there is no material change, from the looks of it, from the one we are now paying 15 cents for to-day.

Mr. BYRNES. Did you not understand me to say I thought there was going to be a reduction in the cost of living as compared with 1911?

Mr. NOONE. No, sir.

Mr. BYRNES. I said in the last few months.

Mr. NOONE. That is true, but these are necessities of life that must be used daily.

Mr. BYRNES. You know we have to live and to buy necessities just the same as every other man, and we know those things in which there has been a reduction and those in which there has not been a reduction.

Mr. NOONE. Take your gas, coal oil, gasoline, and fuel.

Mr. BYRNES. There are many things in which there has not been a reduction.

Mr. MAGEE. The tendency is toward a reduction.

Mr. NOONE. Yes, sir; on some things.

Mr. MAGEE. It is general.

Mr. ANDERSON. You do not use gasoline for cooking, do you?

Mr. NOONE. Yes, sir; we do. In some places in the West, coal oil stoves are used every day in the summer when it gets too hot to use coal; and in 1911 we were getting \$10 coal, whereas we are paying \$22.50 a ton for it to-day.

Mr. BYRNES. Has there been no increase in wages since 1911?

Mr. NOONE. Yes, sir.

Mr. BYRNES. Then why go back to 1911 for your comparison?

Mr. NOONE. This is not the 1911 schedule. You can come up to 1915 and 1916 and get the figures I am giving you on this subject.

Mr. BYRNES. I do not follow you exactly with reference to the figures you are giving. As I understand the situation, in the last two or three years the lay inspectors have received an increase in compensation: is that right?

Mr. NOONE. That is true.

Mr. BYRNES. The question is whether or not that increase is a sufficient increase. Your argument is it is not?

Mr. NOONE. It is not in keeping with the increased cost of living, no, sir.

Mr. MAGEE. Suppose the cost of living goes down?

Mr. NOONE. Aside from the fact it does go down, I can only answer then, by the very fact there is not a man in the lay-inspection force to-day who has not the intelligence and ability, the executive ability to run any department in the packing house; and they have to make

their brains not only against the foremen of those departments, but also against the assistant foremen, the assistant superintendents, and superintendents.

Mr. MAGEE. Conceding that, perhaps the question most generally discussed in the country to-day is whether deflation is being carried out too rapidly or not.

Mr. NOONE. That seems to be so.

Mr. MAGEE. There is no doubt in your mind that deflation is steadily going on and will continue?

Mr. NOONE. I can only answer that from my viewpoint, and that would be to say that profiteering had been cut out to a considerable extent.

Mr. MAGEE. I do not know but what I agree with you on that, but not to a very great material extent. But it seems to me it must appear to you, as to every other intelligent citizen, that deflation is going on and must continue until conditions are very near normal, and the main point is the increasing purchasing power of the dollar. That is the main point, is it not?

Mr. NOONE. Yes, sir.

Mr. MAGEE. And if a dollar purchases more to-day, that would be equivalent to an increase in wages?

Mr. NOONE. But when our States—the public utilities commissions in the States—are giving corporations increased rates, you can understand when a corporation is given a right to increase the gas rate from 30 cents a thousand to 80 cents a thousand, with a 50-cent meter charge on top of that, that they are not going to reduce it; and you can readily understand when a railroad corporation goes before the State commission and asks permission to increase the car fare from 5 cents to 8 cents, and have now gone after an increase to 10 cents, that there is not going to be a decrease.

Mr. BYRNES. When did you write this letter to the Secretary?

Mr. NOONE. A year ago.

Mr. BYRNES. I thought so, and you were perfectly justified in writing it then. But do you not appreciate in the last few months that something has been happening and that the argument you and I had then, and every other salaried man, for an increase of salary, because of the increased cost of living, which was perfectly good up until August of this year, is now of no use at all? In the textile world, for instance, the employee who had his compensation raised because of that is now meeting with a reduction of from 20 to 60 per cent in his wages. And we no longer have this argument about the high cost of living, and the only argument you can make that would be effective is that your services justify it. And if you are going to base it on the cost of living you ought to reduce your salary, because the cost of living is going down and there ought to be a reduction of salary along with the going down of the cost of living. It came up with it, and why should it not go down with it?

Mr. NOONE. There are things that come up that never go down, that I say enter into a man's expense every day throughout the year. His rent has increased 100 per cent and his taxes have increased. But, as I stated, there are things you do not have to use once in three or four years that are going down in price.

Mr. BYRNES. The salaries came up on that account.

Mr. NOONE. Yes, sir; to some extent.

Mr. BYRNES. And you will have to admit that on account of the reduction in the price of sugar we ought to take a little off of your salary, because you can buy more sugar to-day for the same amount of money. Would you admit that?

Mr. NOONE. Yes, sir; that is true.

Mr. BYRNES. And therefore we can reduce your salary to some extent.

Mr. NOONE. Not on account of sugar.

Mr. BYRNES. If the Department of Labor shows there has been reduction in the cost of the necessities of life, you will agree to having us reduce your compensation in proportion to the reduction in the cost of living?

Mr. NOONE. Not when you can go out in the world and get a salary commensurate with what you are doing.

Mr. BYRNES. You have no argument on the cost of living and there is no use wasting time on that. You have to base it on another argument; you have to base it on the fact your job is worth more.

Mr. NOONE. I am basing it on that; yes. I am trying to show there is not a lay inspector on the force to-day who has not the education and executive ability to run any department in the packing house.

Mr. BYRNES. Then argue that and do not take up time on the cost of living, because you can not get anywhere on that.

Mr. MCGEE. Probably there is no class as badly off or that has been as badly off, so far as compensation is concerned, as the teachers in our public schools and the professors in our universities—the most intelligent men in the country, teaching the children of the country. And I think you must appreciate the fact that prices must come down generally. You may think they will never reach the level they were, but if you live long enough you will probably find out they will.

Mr. NOONE. I hope I live to see it.

There is still another class in the Bureau of Animal Industry who risks his health and life to safeguard the welfare of the many. As you are aware, the meat-inspection law was inaugurated primarily to preserve human health and life by maintaining strict supervision over the slaughter of meat-food producing animals, and of handling of the various products derived from them, together with the sanitary conditions surrounding same. This is the risk that the veterinarian takes in the discharge of his duties, and as a professional man he is the most underpaid of any in the service.

Men working for the packers on the killing beds earn from \$32.30 to \$43.34 per week, ranging from \$1,679.60 to \$2,253.68 per year. In many instances those men are uneducated and foreigners. Compare the above figures with that of the trained and educated veterinarians in the department whose salaries range from \$1,620 to \$1,920 per annum, and it seems almost incredible.

Mr. MAGEE. I think you will find there are Government employees who receive comparatively less compensation.

Mr. NOONE. Yes; that is true. And on account of the condition now prevailing in the veterinary force, as the chief stated here a few moments ago, there is only a very few men in the freshman class. One of the largest colleges, in fact the only college in our State at Kansas City, Mo., has been closed for two years.

Mr. MAGEE. A veterinary college?

Mr. NOONE. Yes, sir.

Mr. MAGEE. I know, but only a few of them probably enter governmental employ. There is a great demand for them in civil life.

Mr. NOONE. That is true, sir, but you are not going to get the men to enter the service for the salary.

Mr. MAGEE. Whether they enter the governmental service or not, probably would not have any effect upon the attendance at the colleges.

Mr. NOONE. It is due to the fact that in the past few years the Government has been largely employing those gentlemen.

Mr. MAGEE. The war is over now.

Mr. NOONE. Previous to the war.

Mr. MAGEE. But it must be a fact that ordinarily a very small percentage of veterinarians are employed by the Government.

Mr. NOONE. You admitted just a short time ago this country is facing a crisis in the matter of getting school-teachers. I noticed in the paper here sometime ago where they are several thousand or several hundred thousand short. And yet in many of our cities we pay an average of \$1,800 per annum to the school-teachers, to young ladies, and allow them from two to three months off in the year, too; and here we expect veterinarians who have spent—

Mr. MAGEE. I do not care to continue the discussion, but I think you must admit and appreciate we can not keep up the war conditions. The war is over and we have to get down out of the clouds and get our feet back to earth and keep them there until you have normal conditions.

Mr. NOONE. Yes; and you must readily understand that in a few more days the ports will be closed to foreign labor; and I understand 51 per cent of the population of the United States is now in the great cities and only 49 per cent on the farm.

Mr. MAGEE. The farmers claim they can not get anything now for their products, and I guess they are right.

Mr. NOONE. Probably that may be so.

Mr. MAGEE. So why do you want more on the market than what they have already produced? They are clamoring now for relief, and ought to have it.

Mr. NOONE. There is a shortage of intelligent labor all over, and men in the business and professional world, and corporations, are crying out for help at far greater compensation than the Government is paying.

Mr. MAGEE. The Government can not compete with outside corporations in the payment of wages. It never has and never will.

Mr. NOONE. No, sir; that is true.

Mr. MAGEE. You will never get anywhere by increasing wages. That has been the great trouble in raising the cost of living all the time; you simply go around in a circle. You increase wages generally and then somebody who has something to sell increases the price of the products; then you increase the wages to meet the increased price of products and then they increase the price of the products again and you just continue to travel around in a circle until you get everything up so high the old bubble bursts, as it is bursting now. The main thing is to increase the purchasing power of the dollar, in my opinion, and that is what we all ought to strive toward, and not an increase in wages. That is what is going to

happen, anyhow; you can not get away from fundamental laws. The salary you are getting now will purchase more next year than it is buying now.

Mr. NOONE. That may be true, but it will have to be demonstrated.

Mr. STEVENS. Mr. Chairman, speaking for all the inspectors, the veterinarians and lay inspectors as well, we are relying on the character of the work we are doing for the United States and our qualifications to get an increase. We feel we should be paid commensurate with our duties, regardless of the cost of living. We admit living is going down. If you open up a big business and employ an attorney by the year or a physician by the year, you do not figure out the cost of living; you pay him what his services are worth.

Mr. BYRNES. That is the point.

DAIRY DEMONSTRATIONS.

Mr. ANDERSON. Dr. Mohler, I would like to ask you one question on another item. As I recall, there used to be a provision or an allotment under the tick-eradication item for dairy demonstrations in the South.

Dr. MOHLER. That is right.

Mr. ANDERSON. Is that still being carried?

Dr. MOHLER. No, sir. You will recall it was the desire of the committee and also the wishes of the department to have that \$50,000 allotted equally between the animal husbandry work and dairy division work, so that was dropped from the tick-eradication item and put on the two items under animal husbandry and dairy division demonstration work. That was done last year, but unfortunately after making this transfer the two \$25,000 appropriations were stricken out, so the bureau lost that amount.

TUESDAY, DECEMBER 21, 1920.

FOR INVESTIGATIONS AND EXPERIMENTS IN DAIRY INDUSTRIES.

Mr. ANDERSON. Mr. Rawl, you might explain the reason for the change in language in this item 61, page 52, to begin with.

Mr. RAWL. That is the introduction of the words "repair and improvements to buildings"?

Mr. ANDERSON. Yes.

Mr. RAWL. That is simply put in to give us the opportunity to make repairs and changes in buildings. It quite often happens there is a close point between "construction" and "repairs," the latter being now authorized, and this language would give us more latitude in dealing with the matter.

Mr. ANDERSON. Does the limitation of \$1,500 apply to your bureau?

Mr. RAWL. It does not. But this does not anticipate new buildings that would be beyond the intermediate stage, we will say, between ordinary repairs and putting up new buildings. We would not anticipate starting new plants of any sort under this item, but full latitude to make such changes in equipment as is necessary.

Mr. ANDERSON. The language here clearly covers the erection of buildings.

Mr. RAWL. Yes, sir; additions. Similar language to that was in the same place heretofore—including repairs, alterations, and additions to and erection of buildings absolutely necessary.

Mr. ANDERSON. If you do not contemplate any new buildings, why put it in here?

Mr. RAWL. I say the erection of new units or new plants of some sort. The addition of a wing to a building, or a change or addition of a room, or something of that sort, more or less of a minor character, we feel, and our solicitor would hold, that the question of starting a new unit of any sort must be authorized by Congress.

Mr. ANDERSON. We do authorize it. When you include in this language the erection of buildings, we clearly authorize the erection of buildings?

Mr. RAWL. Yes, sir.

Mr. ANDERSON. And you would be authorized by law to expend the appropriation for that purpose if this language remains in here.

Mr. RAWL. We would not have the money to do it, however, so that it could not be used.

Mr. BYRNES. If you would not have the money to do it, the words are not necessary, then?

Mr. RAWL. I mean we would not have the money to start any elaborate building of any sort.

Mr. BYRNES. You have no objection to striking out the word "erection" of buildings there?

Mr. RAWL. No. This we do not regard as a tremendously serious matter. It has been carried in some places in bills before and has proven very helpful at times, but it is not a tremendously vital matter.

Mr. ANDERSON. You eliminate the words "and markets" at the end of the paragraph.

Mr. RAWL. It was put in there, in the first place, a good many years ago in connection with our work of inspecting renovated-butter plants, and we did inspect the markets at that time and still do, in a measure. But our duty is restricted primarily to ascertaining whether the packages in which renovated butter is contained are in conformity to law, and it constitutes such a small feature in marketing that it is more or less confusing since the Bureau of Markets has been developed. This does not seem to be at all necessary, because we are not dealing with marketing; we are only inspecting these packages to see that they are in conformity with law. That is the only specific duty we have in marketing.

Mr. ANDERSON. If I remember your program of work, you did have some studies or investigations connected with the marketing of milk and butter. Do you maintain those projects now?

Mr. RAWL. No, sir; that depends altogether on what you call marketing. I am not very clear on that myself. We are doing work in the milk plants. The technical and physical end of the milk plants involve various features of their management and handling. Whether that is marketing or not is debatable. We do not think that it is. We think it is the manufacturing and preparation of a product that would involve, primarily, not the economic problems but the physi-

cal problems. I did not, therefore, have that type of work in mind when I said we were doing nothing in marketing. If that is construed as marketing, I suppose we do; but I think we are clearly on sound ground to consider it more nearly in the class of manufacturing.

Mr. ANDERSON. Take up your proposed increases under this item.

ACTIVITIES.

Mr. RAWL. May I make just a very brief general statement beforehand?

Mr. ANDERSON. Yes.

Mr. RAWL. I think it will help and have some bearing on a great many of our items. Our dairy work consists mainly of two classes of activities. The first is research investigations with reference to fundamental problems of national importance. The second, what might be termed extension or field work, is the application, the carrying out to the field, and aiding in applying the results of these investigations, with the view that when such aid is no longer helpful to the introduction of those methods that this ceases to be a function of our activity and that effort will be applied to something else.

Those are the two large groups of work and I wanted to mention them because many of our items relate to the carrying to the field of the application of the results of fundamental studies.

Mr. ANDERSON. I think we have got to come to some conclusion as to what is the proper application of methods which you have worked out and what is administration and extension work which ought to be done by the States Relations Service.

Mr. RAWL. That is the very point I have in mind, sir.

Mr. ANDERSON. I have talked with the heads of some of the agricultural colleges and I think they feel that you may be encroaching upon their prerogatives in the administrative work you are doing. Now, we have to find some line of demarcation as to what work belongs to you and what work belongs to them.

Mr. RAWL. Yes, sir.

Mr. ANDERSON. Otherwise you and I are not going to know where we are on these propositions.

Mr. RAWL. As to that, we do not conduct work in any State where it does not meet with the full approval and the cooperation of the State itself, and I would submit my case, sir, to all the States we have worked with and let the decision be based upon how they feel about it. As I said before, this is a fundamental question in our work, just how far shall the research units of the Government aid in introducing their methods. Take our Swiss cheese work. We have a method for Swiss cheese making which we are sure is fundamental. It is difficult and it is going to be slow of adoption. It will require an experienced man who has dealt with the matter to aid in introducing it. There are two ways to do that. One is for the States to send their people to some point where this work is applied (and it is applied only in a very few places as yet, and to those places we have given aid in applying it), and let them take up the work and gain that experience and go home and introduce it. The other is for us to send a few men to give no more time than is necessary to help in the introduction of it in a number of the States.

That is what we have had in mind and desire to do, thinking it was most useful and most satisfactory.

Mr. ANDERSON. Then your plan is to send a man who is technically trained, let us say, in this cheese work to some factory where they indicate a desire to begin the production of Swiss cheese on your plan?

Mr. RAWL. Yes, sir.

Mr. ANDERSON. Normally, how long would your man have to stay at that plant, in order to introduce those methods?

Mr. RAWL. He would not have to stay a very long time, two or three days at a time, but he would have to be in contact with it for a season. And let me say here, before we send him to that factory, we would have an understanding with the State people so that we would be working in conjunction with them in helping to apply the method in that factory.

Mr. ANDERSON. Are you doing any work now, or do you anticipate doing any work, in the boys' and girls' pig clubs, cow testing associations, and that sort of extension work?

Mr. RAWL. We are doing some in the cow testing associations to a limited extent. That has been reduced considerably.

Mr. ANDERSON. It seems to me clearly that is work which can be better carried on by the States Relations Service.

Mr. RAWL. That, however, is in line with the technical matter. The cow testing association movement was worked out by us in cooperation with some other individuals who were interested in it. We took it up some seven or eight years ago and helped to standardize it and we have been directing our efforts to help introduce it in all the States. And there, again, I would refer that matter to the States with whom we have worked, as to whether or not they feel that is encroaching upon their natural work, or whether or not it is very helpful. I, myself, for fifteen years, have regarded all these educational activities as primarily the work of the States; I never have thought of them in any other way since I have been in the Department of Agriculture, other than as the States' problems and that our work should be to aid them in starting things that were badly needed.

That is the way we started the dairy work down South. It was farthest from our intention to organize in the department a system in dairy extension which would be perpetual. After we had worked with the States there for awhile and the States refused or were not yet interested, or did not have the facilities to meet expenses half way, we have withdrawn our men.

I wanted to bring this up, because, as I say, it relates to about half of the items here, or to quite a number of them.

FOR SOUTHERN DAIRY WORK.

The first item is this southern work, which the present year is utilizing \$13,250 and we have an estimate for an increase of \$15,110, making a total of \$28,360. That is to restore a part of the work which was withdrawn last year, but not in the exact form. In that work, in the early days, we started the individual farmers keeping record records and getting bulls, etc., and to build silos. That has all

passed out; but there is other work, like the problems of breeding and feeding, cow testing associations, bull associations, and things of that sort, where we can help. I might say, in this connection, as a result of your cooperative work in starting creameries there some 10 years ago, the State of Mississippi last year paid to the farmers \$1,250,000, and we have never had more than one creamery man in that State.

Mr. ANDERSON. Just for what purpose do you want to use this \$15,000?

Mr. RAWL. We want to use it to put on some men. We want a man to work on the manufacturing problems.

Mr. ANDERSON. Dairy manufacturing?

Mr. RAWL. Dairy manufacturing, cheese, butter, and ice cream, and a little condensed milk is coming. There are 80 factories now, about 80 butter factories, and some 50-odd cheese factories throughout the Southern States in the cotton territory, and these have been introduced by this work I am talking about in cooperation with States that gave very little attention to dairying until our men went in there.

Mr. ANDERSON. Is it proposed to let men go around through the South and advise the people down there how to organize their creameries and to carry on their creamery business?

Mr. RAWL. It is the problem of having one manufacturing man work in 8 or 10 States and help in those States where they have no specialists in manufacturing extension work, and to help the college people with the primitive problems of manufacture involved in every State in a small way. That is what one is for. The cow testing and bull men are for the same purpose.

Mr. ANDERSON. You have some more items down here for cow testing and bull association work. Are you going to do that work under all of these items?

Mr. RAWL. No. This is for that southern territory and that is for the balance of the country.

Mr. BYRNES. Your idea is you are working in territory where cattle has been freed from the tick. Is that the territory to which it is limited?

Mr. RAWL. It is not absolutely limited to that, but primarily it is, because that is the only favorable territory. Years ago we had to work in the tick territory, and since the tick eradication has gone so far, this serves as an inducement to help the tick eradication forward. And we now have 80 creameries down in that territory, whereas, when we began the work, a creamery was not thought of. That is not very many creameries, but it is a foundation of the industry.

Mr. ANDERSON. You would send one man down to assist the colleges in the manufacturing problems; what else would you expect to do with this \$15,000?

Mr. RAWL. We expect to put in one bull-association man and one cow-testing association man.

Mr. BYRNES. Would you send those men to the various States and agricultural colleges?

Mr. RAWL. Yes; or to places where arrangements have been made with the agricultural colleges to go. Often they do not go to the

colleges; they go to some county where the problem lies, through an agreement with the agricultural college.

Mr. BYRNES. Will the college select the place?

Mr. RAWL. Sometimes the college will select the place and sometimes we select it jointly, depending on what the problem is; but the college either selects or approves the place. Those are three general men, and then the balance of it, whatever it is to be devoted to work in the cheese territory. Mr. Chairman, it is exceedingly hard to make estimates now. Estimates are always estimates, but they are less accurate now than ever, because the prices of people have changed and when you go to get a couple of men you do not know just what you are going to have to pay. In addition to these three general men, you perhaps remember the cheese work I alluded to in the past, that is restricted largely to the Blue Ridge Mountain region. We want to do a little more refined work with those farmers by placing a couple of men in those territories in cooperation with the States, to deal with this primitive work we were doing 10 and 12 years ago down in other sections of the South. Dairying is very primitive with them, and this cheese industry that has grown up in the mountain region now needs that production work which the States are not fully in a position to go forward with. That covers this item in the main.

FOR IMPROVEMENT OF DAIRY PRODUCTS.

The next item is general work—in the name it is rather too general I think. There is \$11,250 now being used and an increase is requested for \$11,600 more. This deals with the matter of improving the quality and increasing the consumption of dairy products on the farms and, to some extent, in the cities. This may sound like a primitive thing and an unnecessary thing to do; but with the little funds we have spent on this work the results have been marvelous in some respects. We found one county, for instance, where there were 45 farm families who used no milk or milk products of any kind.

Mr. BYRNES. Forty-five families in a county with no milk cows?

Mr. RAWL. Forty-five families in a county with no milk cows; yes.

Mr. BYRNES. You do not think that is so extraordinary, do you?

Mr. RAWL. I do not think it is so extraordinary; but I think it is a horrible condition.

Mr. BYRNES. I will agree with you; but I came to the conclusion you were surprised there were so few. I am satisfied that is not an extraordinary condition at all.

Mr. RAWL. There is one farm in the United States out of every six that has no family cow. Now, when we realize the vitalness of milk to feed the people—

Mr. BYRNES. How do you arrive at those statistics?

Mr. RAWL. Largely from the census.

Mr. BYRNES. The last census?

Mr. RAWL. No, sir; not the last census, but the one 10 years ago.

Mr. BYRNES. Do you believe five out of six families now on the farm have any milk cows?

Mr. RAWL. I am not sure they have, sir.

Mr. BYRNES. If you can show it to me I will be very much surprised, and agreeably so.

Mr. RAWL. Perhaps your country, Mr. Byrnes, has a lower average on account of the large per cent of colored population than would be the case in many other sections; but this situation is a very great loss when we realize the effect milk is playing in the proper diet.

Mr. ANDERSON. Is not that question of cows on the farms and the situation to which you are referring an economic problem which you can not cure?

Mr. RAWL. Well, no, sir. Here, again, we are helping to stimulate a movement. In one county, through this effort, we got 400 family cows purchased.

Mr. BYRNES. Tell us how you do that; I am interested to know.

Mr. RAWL. For instance, here is an extension organization—home demonstration it is generally called—and ever since the war began we have been emphasizing this and many of the State people have also; but in a very large part of the country it is not at all realized. Now, we interest these women's organizations, backed up by the whole extension organization, in the great importance of getting every farm family to have plenty of good milk for the children. Then we go out with them and start in a certain county and say, "Let's use the telephone and find out how many people in this county have no cows, and let us call all those people together and see if we can not get a movement started to secure family cows." Our job is not to do this whole thing broadside; not at all. Our job is to help focus the idea in the minds of the older individuals; in many cases the extension organizations.

In all cases, it is the need to get the people generally to help do this trick in one county or so in a State. Then we are able to carry the experience to other counties. For instance, in some milk campaigns in one of the States the consumption of milk was increased 150,000 quarts daily. The consumption of milk in the cities where similar work had been done was increased the last year or two by about 15 or more per cent. We have participated in that. It has been a joint proposition and we have helped. We have in places a great milk problem. There are 80,000 farmers who joined a dairyman's league—I do not want to go at length into this and impose too greatly on your time—and there has been a great deal of fighting. Many of the factories of the condensers shut down in October. They stated they had many millions of dollars worth of condensed milk on hand; that the price was declining; that the demand had declined in Europe; that whereas they had been sending Europe 120,000,000 pounds a month, that market had been shut off and they shut down their plants. And here were these 100,000 farmers with their milk market reduced. I am not going into that, only to bring out this point: I am perfectly satisfied that, in a very large measure, if all the milk and milk products were consumed on these farms that should be consumed that situation would be relieved and the surplus could be disposed of. The farmers are selling their milk. They do not keep enough butter and cheese to use, because they have gotten into the habit of running their dairies as a commercial proposition.

The CHAIRMAN. Is it not desirable to run it as a commercial proposition?

r. RAWL. Not to the deprivation of food for their own families. milk producers need milk just as badly as the people in the city. gentleman from New York City was out in that territory on a mining expedition and he went to a farmer to get some milk to drink. At the first farmhouse they told him that they had no milk, they had shipped all their milk that morning. He went to the second farmhouse and they said, "No, we have no milk; we shipped all our milk this morning." This man concluded that if milk is too expensive for the people who produce it to drink that it is too expensive for people in the city to drink.

r. BYRNES. I understand that condition is not so unusual. As a matter of fact, you can get milk more readily in the city than you can in the small towns. That is certainly true down South. I have been in the country where you would expect to find milk and have been offered me condensed milk, and I regret to say that instead of four out of six you will find that three out of six farmers in our country who have no cow. That has been the situation in the last few years. In the small towns you can not get milk.

r. RAWL. The quality of the farm dairy products can be greatly improved. I do not wish to cast any reflections on our cherished joys of country life, and I do not want to make them broadly, but we need better methods whereby they will have more abundant products and better products, and consume at least a sufficient quantity of milk to maintain the stamina, the growth, and the vigor of the growing children of the farms. This is a little work along that line by which we wish to help stimulate the improvement of these products and the increased consumption, and it is wonderful what can be accomplished.

r. ANDERSON. Very well, we will take up the next item.

COW TESTING ASSOCIATION WORK.

r. RAWL. The next item is for cow testing association work. We have \$12,135, and we are asking for an increase of \$20,000. That takes us right back to the original consideration of this matter. It is hardly necessary, I suppose, to review the merits of the cow-testing associations. Briefly, there are 457 associations, comprising a membership of 11,918, with 203,447 cows kept in them. The farmers pay an average of \$2.50 per cow, aggregating \$508,000. One association increased its returns over the cost of feeding from \$52 to \$83 per cow in one year. That is based on recent prices, a relative increase of 50 per cent or more.

The question of whether or not we should do this, Mr. Chairman, is the question that goes right into the problem I mentioned. There are a lot of States that have not put on specialists in cow testing association work, and we wish to aid them in doing so.

r. ANDERSON. Are these States in which there is considerable dairying, or States in which there is a comparatively small amount?

r. RAWL. In the main, I should say they are States with a comparatively small amount, although they represent some of the Eastern and Middle Western States. However, we are speaking perhaps primarily of the States like the Western States with their great dairying projects, that must ultimately come to dairying as a means

of marketing their product. They can not ship alfalfa, of course. They are coming to dairying as an important industry, a side industry so that they can reach the great eastern markets. That is perhaps true also of some of the great Middle Western States, Mr. Chairman, which are really not dairying States as yet. Will you not agree that some of our great Mississippi Valley States are really not dairy States yet, but they are working more and more in that direction. Dairying has been an important side issue, we will say, but it has never assumed the proportions of one of their main industries in some of those States. Do you not sanction that, Mr. Christy?

Mr. CHRISTY. I think so.

Mr. RAWL. It is a question of how far the department should go in assisting them. As I said before, where they are not needed, where we can not help introduce this work and make it go, we do not wish to go, sir; and there again I should feel very much inclined to accept the decision of those people with whom we work as to how much needed it is. I think this can be very useful; I think we can hasten the day when this system will be generally installed.

I want to say another word about the cow-testing association, which is a community organization. You gentlemen are familiar with the organization, I assume, in a general way. If you are not, I will state briefly that it is an organization of about 26 farmers who employ a tester who spends a day on each farm inspecting their business, methods of milking, making the Babcock test, figuring up the feed and the cost, indicating the animals that are profitable and the animals that are unprofitable, and giving some counsel to each man.

Mr. ANDERSON. Is it not true as a general proposition that this work can only be introduced where you have a relatively high type of dairy development?

Mr. RAWL. I should say yes, sir; that is true, speaking relatively. In the first place, it takes 26 herds that are within driving distance of one another. A great many of the testers use a Ford, and the farms must be close enough so that they can drive from one farm to another in half an hour or an hour; and these herds have to have 20 or 30 cows apiece, or there must be two or three of these herds very close together, so that they can be handled as one unit. That is the necessity. Further than that it is not limited.

Mr. ANDERSON. That means, I think, that your work may be most effective if restricted?

Mr. RAWL. Territories like the major part of southern Minnesota and Wisconsin; but when you take Illinois there will be territories where, of course, the cattle are very thick, and other sections of Illinois where the herds are not thick enough to make cow-testing associations feasible. The same thing would apply to Indiana, Kentucky, Missouri, Iowa, and other States.

Mr. BYRNES. You send a man to these cow-testing associations to work with them. Is that what you do?

Mr. RAWL. We cooperate with the States, the States' extension department, in giving aid to the county agent in perfecting these organizations. In order to organize them, it takes a pretty good man. He has got to go around in a community. The county agent often times is quite strong enough, but he does not know the history of the

ovement, and he does not believe in it to a sufficient extent. He believes in it in a general way, but he wants to see it done.

Mr. BYRNES. He is not a specialist in it?

Mr. RAWL. He is not a specialist in it. He has not the experience of special and definite information necessary to convince the farmer that it is a profitable thing to do.

Mr. BYRNES. When you get the association organized, where does our man come in?

Mr. RAWL. Our man comes in in emergency matters. The idea is to get a few of these organized over a State and running under the supervision of a county agent. In many States there is no specialist in the extension force devoting himself exclusively to cow-testing association work. In fact, some States have not even a general dairy specialist.

Mr. ANDERSON. There are a lot of States that do not have any dairying to amount to anything?

Mr. RAWL. Yes, sir; but I will tell you, Mr. Chairman, that it is a calamity, and it is a calamity that we ought to meet. We might just as well look it in the face. It is a calamity economically and from the standpoint of nutrition and health. I would not say economically if it was not for the future, because people should have their choice as to whether they milk their cows commercially, but I do not care whether they milk them commercially or not, the most important thing is that they have enough milk to feed their children. In that respect we have got a big responsibility to meet.

Mr. MAGEE. Every way we turn we meet a calamity.

Mr. RAWL. That is true, yet I can not minimize the importance of this matter.

Mr. MAGEE. I have heard the word "calamity," I think, every day that I have been down here. It is one general series of calamities. Let us have a little optimism.

Mr. RAWL. You can not have optimism when there is one farmer out of six in the United States that has no milk for his children.

Mr. MAGEE. What would you do with \$20,000 in 48 States?

Mr. RAWL. We could help.

Mr. MAGEE. You could help, but I am talking about what you could do with a territory reaching from the Atlantic to the Pacific and from the Dominion to the Gulf?

Mr. RAWL. We could not do very much.

Mr. MAGEE. Of course, you could not do very much. There is no use talking about a calamity. You could not do anything if you had \$4,000,000, I judge.

Mr. RAWL. We can help spread this work in a lot of States, that will go on and ultimately be effective.

Mr. MAGEE. Whether you get \$12,000 or \$30,000, I think you will probably stop somewhere short of a calamity, so far as the amount of the appropriation is concerned.

Mr. BYRNES. You could not buy cows and put them on every farm, that is certain, but your argument is that you will bring home to them the necessity of this thing?

Mr. RAWL. Yes, sir.

Mr. BYRNES. And try to induce them to do it?

Mr. RAWL. Yes, sir.

Mr. BYRNES. That is all you can do with any amount like this?

Mr. RAWL. Yes, sir.

Mr. ANDERSON. Very well, we will take up the next item.

BULL ASSOCIATION WORK.

Mr. RAWL. The next item is for bull association work, which is the same kind of a problem. We had \$16,450, and we are asking an increase of \$18,460. The bull association is a system of owning bulls cooperatively. There are a number of bulls in an association in what we call blocks, and this brings the improvement of cattle to the very beginner, because a bull located in a certain territory might serve the animals up to his capacity in the community, even if they are all owned in single, individual units, or one cow on a farm, and the bull association takes that improvement, Mr. Anderson, right to the beginner. The merits of the bull association are very marked.

Mr. ANDERSON. They are so marked that it does not seem to me that it ought to take a Government expert to advise people of it.

Mr. RAWL. That is true, it is hard to believe that that is required and yet our average production we know is very low, 4,000 pounds of milk. That is not altogether representative, but we know that our production is exceedingly low, and we know that increased production is the greatest opportunity for the farmer economically. There is nothing he can do to add to his profits more. For instance, in one association the average production of the daughters was 44 pounds more than that of the dams, which, at an average of 50 cents a pound, amounted to \$20 a year per cow. It is true also that the scrub bulls in a territory can often be sold for enough to purchase all the good bulls required, when the bull association is used and sometimes with a margin to spare.

Mr. ANDERSON. All right, take up the next item.

FOR WESTERN DAIRY MANUFACTURING WORK.

Mr. RAWL. The next item is for manufacturing work out in the Western States. We are now using \$13,144, and wish an increase of \$4,500. The purpose of this is to put on a manufacturing man to work in connection with the cheese factories and creameries largely in the irrigated regions. As I said a while ago, dairying is becoming more and more a substantial and important industry there, because of the fact that dairy products, being high in value and concentrated in character, are more economical to ship. Furthermore, there is a great opportunity in those rich valleys, with cool weather and an abundance of grass, for the manufacture of high-grade products, but dairying is a primitive industry in that region, and we feel that we could give some aid to that work to great advantage.

Mr. ANDERSON. Take up the next item.

FOR WORK IN RELATION TO SWISS AND OTHER CHEESES.

Mr. RAWL. The next item is for work relating to Swiss and other foreign cheeses. This is for field work to aid in applying, in the factories in various States, the improved methods that have been

developed here. We have developed methods for making Swiss and Roquefort cheese, and, Mr. Chairman, you have seen some of the samples of those that have been made, I believe. We think they are comparable with the finest imported cheese, and we wish to extend the same aid in a few States where they are interested in this character of manufacture, to help in the introduction of these methods, that is by applying them in a few representative factories, in cooperation with the State organizations, and to observe and help them until the flarebacks that are right numerous are in a measure at least overcome.

Mr. ANDERSON. How much are you spending on this work now?

Mr. RAWL. We have no definite project. We are sending out a few men periodically, but we have no one regularly employed on it.

Mr. ANDERSON. Is the research work continuing on this?

Mr. RAWL. The research work is continuing on this; yes, sir.

Mr. ANDERSON. In what direction is the research work being projected now?

Mr. RAWL. There are a number of problems that are interfering with the work. For example, if you remember, the method of making Swiss cheese is by the use of two pure cultures that produce these changes in the ripening process that give the characteristic Swiss flavor. It so happens that the normal bacteria content in various communities differs just like normal grass. For instance, in a pasture in Nebraska you will see a certain number of grasses, whereas in Minnesota you will see a decided variation. It so happens that some of these organisms play havoc with the working out of these processes, and because the thing works under certain conditions, it does not necessarily mean that it will work under other conditions. That is one of a number of problems.

The ideal thing, Mr. Chairman, would be, if we could, to establish a method of pasteurization so as to control the competitive organisms and give the cultures a free hand. That would be a great step, but we have not been able to accomplish that as yet.

Mr. BYRNES. Where are the factories that are engaged in the manufacture of Swiss cheese located, as a general thing?

Mr. RAWL. They are largely in Ohio, Wisconsin, a few in Pennsylvania, and New York. There are about 500 Swiss-cheese factories now in the country, but most of these factories are making what the market terms a second.

Mr. MAGEE. You mean they manufacture Swiss cheese entirely?

Mr. RAWL. Very largely. They manufacture Swiss cheese entirely during the summer season, or most of them do. They often make what the market calls a second, and that sells in our local market for from 7 to 15 cents less than the best grade.

Mr. BYRNES. Why is it inferior?

Mr. RAWL. It is inferior because it may be that the organisms that produce the characteristics of flavor are subdued, or perhaps the organisms happen to be not present in sufficient numbers, or perhaps the milk is of too low a grade, or for various reasons. Everybody wants imported Swiss cheese. What happens is that the Swiss send only their best cheese here, so that the imported cheese is par excellence, whereas such a large quantity of our cheese being second grade, it has the reputation generally of being inferior. So we should like to help some of the factories.

Mr. BYRNES. How can you help them?

Mr. RAWL. By going into the factories. In the first place, we are supplying now for the time being the pure cultures. We are making pure cultures in considerable quantities and sending them out to such people as are trying to introduce them.

Mr. BYRNES. Your object being to improve the grade?

Mr. RAWL. Our object being to get them in the habit of using these cultures so as to stabilize the methods and improve the grade.

FOR CREAMERY MANAGEMENT INVESTIGATION.

Mr. ANDERSON. What is the next item?

Mr. RAWL. The next item is for creamery management investigations. We have \$7,140 now available. There is an increase asked of \$8,000. That is a work on the details primarily of the small creamery organizations. It is true that the larger concerns employ skilled people to help in perfecting their methods of management and the improvement of their products, the elimination of waste, etc., that involve more or less the management of the factory. We would like to extend that investigation so as to outline methods that will help not only in the improvement of the product but the simplification of the management. One of the troubles with these factories is that they do not know what they are doing, and cooperation in the cheese factories and creameries has been hindered perhaps as much by that difficulty as any other one, or more.

Mr. BYRNES. As I understand it, by your research work you ascertain the best methods, and believing your methods superior to those which are followed by the factories, you endeavor to communicate that information to the factory; is that right?

Mr. RAWL. Yes; this is an investigation primarily.

Mr. BYRNES. Your contention is that you are able to ascertain the best method?

Mr. RAWL. I might say in that connection that while a great deal of work has been done on physical methods—that is, temperatures in pasteurization and temperatures in churning, for instance, and all that sort of thing—yet in the study of the whole problem of the factory, the running of it, the elimination of unnecessary equipment, and a system whereby the process, from the entrance to the finished product, can be thoroughly checked, is one that has had very little attention from anybody in small plants, and, of course, it is as difficult a problem in the small plant as it is in the large plants.

Is there anything further on that item, Mr. Chairman?

Mr. ANDERSON. Nothing further.

INVESTIGATION OF BUTTER BY-PRODUCTS.

Mr. RAWL. The next item relates to investigations on the by-products of butter. We are using about \$12,200, and are asking for an increase of \$14,000. That is desired to extend in a certain way our investigations of the utilization of skimmed milk. The method of manufacturing butter, whereby the fat alone is used, makes possible a loss in human food products, and this, we feel, is a very important

matter, both to the farmers and to the consumers. There is probably a billion and a half pounds of sugar, albumin, and casine incident to the butter industry, susceptible of utilization as human food. It is a big field for investigation. We think it has possibilities of value, not only to the producer but in increasing the amount of food to the consumer, which, in turn, will tend to reduce the price of these important products. That is a research problem, pure and simple.

Mr. ANDERSON. This is not the cottage-cheese proposition?

Mr. RAWL. No, sir: although it is following along in the same line. We want to develop in the laboratory, if possible, processes that will make possible the utilization of these by-products. Some progress has been made. For instance, we have devised a method for removing the albumin. Milk albumin has never been removed in an edible condition. It has a strong flavor. But we have gotten a powder that, for baking purposes and perhaps others, we think offers considerable possibilities, but it is made only on a laboratory scale as yet and its commercial possibilities are yet to be worked out.

Mr. ANDERSON. What is the market for this sort of product?

Mr. RAWL. The market for this will be comparatively small to begin with. The market will have to be developed. The same is true of milk powder. The 20,000,000 or 25,000,000 pounds of milk powder that are made are perhaps meeting the need now, but we feel when this powder is made good enough and some of the defects are removed that the market will be built up as it has been for canned goods in the last 20 years. It is a valuable food, but the people will have to be educated to use it. That will be the business man's job.

THE INVESTIGATIONS IN MILK CONDENSING.

Mr. ANDERSON. Take the next item.

Mr. RAWL. The next item relates especially to milk-condensing investigations, for which we are asking an increase of \$18,000.

Mr. ANDERSON. What are you spending now?

Mr. RAWL. \$7,120. We are making about 2,000,000,000 pounds of this product at the present time, which represents the product from about a million cows. The losses on condensed milk have been very large. We do not know just what they are, but a great deal of the condensed milk shipped abroad has been returned, and the losses have been great. There are a number of rather well-known defects or difficulties in the way of these processes, and they are very complicated. The principal reason for this item is that we may install a small condensing plant that would represent commercial conditions, where we could study this on a comprehensive basis.

Mr. ANDERSON. Is it necessary to put in a plant in order to make a study of this matter?

Mr. RAWL. It is necessary in order to carry on the investigational work with continuity. On small problems such things can be done, and we have been working in the past to some extent with other plants, but a pan or batch of milk represents a large sum, a pan of the ordinary commercial size, say 4 or 5 feet, and its loss interferes so seriously with the commercial problems that we have to enter into contracts with them to protect them, which is almost out of the question.

Mr. ANDERSON. If they are so little interested in their own business and its development that they must ask you for safeguards, which you can not give, I do not see any basis upon which the Government can help them.

Mr. RAWL. Well, the point is that in the manufacturing concerns where we have to run a series of experimental tests for a long period of time, it represents a considerable investment, and while some of the larger concerns carry on some experimental work of their own in a small way, yet the small firm has very little chance. These problems have not been worked out, and we are working on that in a laboratory fashion, but it is a big feature of the industry, and we think a very important one.

Mr. ANDERSON. How much do you expect to spend on this experimental plant?

Mr. RAWL. About \$10,000; and the rest we will want for increased help and the necessary facilities to go with it.

Mr. ANDERSON. It is very likely that I was narrow about it, but I had supposed that the processes of evaporating milk were pretty well worked out and that much of the spoilage which characterized the production during the war was due to the fact that a large number of people went into the business on account of what they assumed to be large profits, who did not know much about it.

Mr. RAWL. That was true to a considerable extent.

Mr. ANDERSON. And many of them made a failure?

Mr. RAWL. Yes, sir; but still there are certain difficulties, such, for instance, as the formation of what are called buttons, which is a growth that develops in certain grades of milk, that nobody has known anything about before. It may occur in a carload or five carloads, and that, again, is one of the problems.

Mr. ANDERSON. Is that a matter of manufacturing processes?

Mr. RAWL. Nobody has known what it was. We have determined now that it is an organism, and that it must be overcome either through a change of the method of heating or some other change in the methods of manufacture.

NUTRITION OF DAIRY COWS.

Mr. ANDERSON. Take the next item.

Mr. RAWL. The next item is one for investigating nutrition of dairy cows. The present appropriation is \$10,300, and we are asking for an increase of \$15,000. This is one of the most fundamental problems in dairying. Our work has been devoted primarily to groups of problems. One is the relation of mineral salts to general nutrition, and some of the results that have come are very striking. The whole factor of the effect of mineral salts in the proper nutrition of all sorts of animals—and we are dealing with dairy cattle—is an exceedingly important one. It indicates that there are regions of the country where the quality of the live stock is inferior on account of the fact that certain mineral matters are deficient or are not present in the feeds in sufficient quantities.

Another problem relates to the question of proteins, the nitrogen elements in feed. A few years ago it was generally believed that nitrogen or protein from most of the feed plants was practically the

importance. Now we are finding that that is not at all the case. There are a great many groups of nitrogen, some of which are very important and others that are very slightly important. The tests are made by an examination of the blood primarily. And after and during the process of feeding these different feeds we analyze the blood to ascertain which of these elements has been utilized to the greatest extent. Certain of the proteins we find in the blood from the jugular vein will contain 25 or 30 per cent of certain of these amino acids, or subdivision of the proteins, may call it, in the production of milk. We regard the work in nutrition as yet in its infancy and as being very fundamental to animal feeding and to be national in its significance.

ANDERSON. I find over here under the Bureau of Chemistry, 147, an item suggesting an increase of \$30,000, with which it is proposed to extend the protein investigations, and it says: "Studies regarding the feeding value of the proteins of various feeds have already developed knowledge of great value in producing more efficient and more economical rations for stock," and proceeds to develop an investigational provision along that line. That is the difference between that and the work you are doing.

AWL. I am not familiar with just the scope of the work they are doing. Our own work is applied entirely to the feeding of cattle. We do the chemical study in any further sense than is necessary to analyze these feeds in actual feeding practice.

ANDERSON. Somebody has got to know whether these two are duplicating each other or whether they are not.

AWL. I assume they are working along refined chemical lines, and I am not in a position to say what the scope of their work is.

EXTENSION OF CHEESE INVESTIGATION.

The next item relates to the extension of cheese investigations. We propose to undertake in a comprehensive way the study of Italian hard cheeses, of which we have some considerable importation, amounting normally to 20,000,000 or 25,000,000 pounds a year. We want to study the foreign cheeses that we feel can be made in this country, and we would like to extend the investigations to take up in a comprehensive way at least those, and possibly some others of the foreign types.

ANDERSON. Are you spending anything on this work now?

AWL. Practically nothing on these two varieties. We have done a little preliminary work, but we have not undertaken comprehensive problems.

ANDERSON. Is this Italian cheese a cheese made from goat's milk?

AWL. No, sir; it is made from cow's milk, but both of these are low fat cheeses—cheeses with less fat in them—and it is the possibilities of the utilization of more milk or more of the milk than there is in the ordinary American whole-milk cheese. The Swiss and the Roquefort are practically what might be termed the full-cream cheeses. Roquefort, as you remember, is in

Europe made of sheep's milk, and there are some of these varieties in which goat's milk may be used to some extent, but they are not essentially cheeses made from that milk.

In this same connection, too, we are supplying considerable cultures of these for the time being, to introduce them, which requires a considerable item of expense. We think it is well, however, to begin the carrying forward of this work and introducing it.

DAIRY SANITATION RESEARCH.

The next item is one for dairy sanitation research, relating to the methods of handling and transporting milk. The present amount used is \$6,740, and the increase asked is \$3,200.

The principal reason for this is to give us facilities to study more extensively the sanitary problems involved in the milking machine, which is a great, big unknown proposition in a large measure. Perhaps the greatest problem in the way of a more extensive use of the machine is the sanitary problem. That is an increase of \$2,300.

Mr. ANDERSON. I notice in your program of work for 1919, in connection with these various sanitary investigations, you have a project relating to the cost of handling milk. Is that work being conducted down there now?

Mr. RAWL. Not that particular work. What year was that?

Mr. ANDERSON. 1919.

Mr. RAWL. That particular work, as I recall, related to some wagon studies in a certain number of cities. That work is not being continued in our bureau. The milk-plant studies, however, the physical problems in the milk plant, we are continuing work on.

Mr. ANDERSON. It is difficult to tell from this statement in the program, whether this is a physical investigation of the plants, or an investigation of the cost of handling milk in the cities. It seems to cover both.

Mr. RAWL. At that time it probably did. We were doing both kinds of work, but since that time the wagon studies, the delivery studies, etc., have been discontinued, because that was regarded as essentially out of our province, and the work was completed in cooperation with the Bureau of Markets, and published. I do not know whether the Bureau of Markets is doing anything on that subject at the present time or not.

MILK-PLANT STUDIES.

In connection with the milk-plant studies, we have an item of \$5,515, and we are asking for an increase of \$2,530, to get a little more help in dealing with those problems. This work has involved also the idea of cooperatively handling milk. Some plants have been developed, and there have been a good many failures, and we have been giving some aid in addition to the studies regarding the plant methods to one or two of these cooperative plants.

Mr. ANDERSON. When you say cooperatively handling milk, what do you mean?

Mr. RAWL. I mean owned and operated in the city by the milk producers themselves.

Mr. ANDERSON. For the sale of milk?

Mr. RAWL. Yes, sir; for assembling, pasteurizing, bottling, etc. erally, as you know, those plants are separate companies operated rely independently of the producers. This is a small item that would like to have to extend that work and make it possible to some aid to these cooperative plants in an experimental way.

Mr. ANDERSON. Proceed.

BELTSVILLE (MD.) EXPERIMENT FARM—FOR SUPERINTENDENCE AND MAINTENANCE.

Mr. RAWL. The next item is in relation to the work at the farm at tsville, and involves the processes of farming and handling cattle labor, and the organization that is not directly identified with experimentive work.

Mr. ANDERSON. Let me ask you in that connection, are the nutrition riments carried out at Beltsville?

Mr. RAWL. In the main, yes, sir. The laboratories are there and cattle are there.

Mr. ANDERSON. When you say in the main, that is very indefinite. they carried out elsewhere?

Mr. RAWL. We are beginning to apply some of those results in the . Arrangements have recently been made to cooperate with the versity of Wisconsin, for example, in applying this sodium phos- e feeding. It is found, to explain a little further, that the ing of sodium phosphate before calving and with cattle not ily fed with grain, gives a decided increase of milk during the equent lactation period. Our cattle are kept here under certain itions that are local. These results have been obtained through ies of tests. We are applying them to conditions that are dif- it, in cooperation with the University of Wisconsin, to ascertain her the same thing will hold true under conditions in Wisconsin, later on we will seek to apply them elsewhere. That is the sec- ry stage of the investigation, the confirmatory stage, you may and then following that, if the secondary confirmatory work is factory, we will come to the stage of introducing this in a more ral way in various sections of the country, which we will not ct to do a great deal of further than to aid the local people in States in trying this out, those that are willing to undertake it, all of the fundamental work, the initial experiments, are con- ed here at the laboratories at Beltsville.

is item we are talking about is for the operation of the farm, s not this breeding work or this nutrition work that I spoke of le ago further than it maintains the work of feeding and caring ne animals.

Mr. ANDERSON. What is the cost of maintaining the farm, in addi- o the amount you are asking?

Mr. RAWL. The maintenance of the farm during the past year cost id \$44,000.

NUMBER OF ACRES AND ANIMALS.

Mr. ANDERSON. How many acres have you out there?

Mr. RAWL. About 180 acres devoted to our dairy work.

Mr. ANDERSON. How much have you altogether?

Mr. RAWL. 480 in the whole farm, including this. This dairy work, however, is applied to only 180 acres of it. We are asking here for \$12,000.

Mr. ANDERSON. When you say 180 acres of it are applied to dairy work, you mean that what you grow on the balance of the farm you do not use in connection with your dairy work at all?

Mr. RAWL. No, sir; that goes to the animal husbandry work, the animal husbandry division, pertaining to hogs, horses, poultry, and other animals.

Mr. ANDERSON. How many animals have you out there in the dairy division?

Mr. RAWL. 135.

Of course, practically all of these animals are on experiment. The experimental work requires a great deal of labor, and high-priced labor.

And then, too, the breeding work that I shall take up in the next project requires the carrying through in a comprehensive way of tests of the offspring for various generations, and it is expensive work. However, we figure our receipts in milk used by the laboratories in that work amounted to about \$15,000, and an estimate of the value of the young animals is hard to make, but we feel that it is conservative to say that the young animals from our breeding stock are ready worth \$15,000 for the past year.

Mr. ANDERSON. I suppose you have to buy additional feed?

Mr. RAWL. We buy about \$9,000 worth of feed.

Mr. ANDERSON. In making your estimate of \$12,000 were you figuring on the cost basis existing at the time these estimates were made?

Mr. RAWL. We were; yes, sir.

Mr. ANDERSON. It is probable that those costs will be somewhat reduced next year, is it not?

Mr. RAWL. It is, and to whatever extent they are reduced that estimate could be reduced. Of course, these estimates were made some time ago. I might say that we have strained ourselves to take care of this farm, because we thought that these feeding experiments constituted some of the most fundamental work we are doing, and we have tried, therefore, to take care of this work during the high prices, etc. Of course, labor is costing us twice as much as it did three or four years ago, and that will probably come down as conditions change, but we have been very hard put to keep this work going, and, as I say, we favored it over other work, because of its exceedingly fundamental character, this breeding and nutrition work.

DAIRY-CATTLE BREEDING.

The next item relates to the dairy-cattle breeding investigations, and, Mr. Chairman, I think that you perhaps are familiar in a general way with what those investigations are. Briefly, they are the comparison of line breeding, inbreeding, and outbreeding with both sires and dams of proven production capacity. In substance, this work is the testing out on dairy cattle of some of the latest theories and conclusions of the geneticists. It is not strictly genetics, but it is applying the theories of breeding along these various lines.

to dairy cattle. We have advocates of various systems of breeding. On account of the readiness with which inbreeding or close breeding enables the fixing of types, a great many of our breeders are very much inclined to it.

The definite results of inbreeding on future generations we know comparatively little about. This work, therefore, in the first place, involves the bringing together, the tabulation, and study of methods of breeding in private herds over the country, in so far as those methods and the records are at all complete. In many cases famous animals and famous families are not very well known, that is, their ancestors are not well known because the records were not kept or they were not posted. In so far as possible this work contemplates the assembling and studying of methods of breeding and the results of breeding that are available. This is to supplement these three lines of breeding work, inbreeding compared with outcrossing, line breeding compared with outcrossing, making three different types, and, as I say, with the use of proven sires and dams; that is, sires the production of whose daughters has been established, and dams who have gone through the advanced registry. It is an expensive and a long-time experiment. It is work that we think is very fundamental, and it will prove highly beneficial to some of the principal breeders in the country, and when you take into consideration the great value of dairy cattle, and what it means to understand the methods of breeding, we feel highly desirable to carry the work on. We are devoting \$8,000 to this work, and we are asking for \$18,000 increase.

Mr. ANDERSON. You have been conducting this work up to the present time on \$8,000?

Mr. RAWL. That means the theoretical work and the supervision.

Mr. ANDERSON. What I want to know is just the basis for the increase to \$18,000.

Mr. RAWL. I should have said a while ago that we have not begun the third line of this experiment. We have only bought the cattle for two lines, and we want from \$10,000 to \$12,000 of this to purchase more cattle with, to get the third leg of the experiment well under way, and then we want to increase the force somewhat. We want to put on some more help, because there is an enormous amount of work that should be done to get this data together and work it out. This, however, does not contemplate the handling of the animals further than supervision, but is for the technical and experimental work. The handling of the animals and the care of the animals is carried under the general item I spoke of a while ago.

I want to say in connection with this, too, that you will see at a glance that the maintenance of these proven sires and the use of them in future generations would be a difficult task, because there are so few dairy sires that are proven, whose heifers have been tested out systematically. We are not selling these bulls from our proven sires and dams. We are lending them largely to the experiment stations who are using unproven sires, and they keep these young bulls after they are eight months or a year old, until their daughters come into milk, and are tested out systematically. Then, from these successful sires proven in the experiment stations, of which we have some 15 or more now supplied, we draw those sires back to go into the experimental work here for subsequent breeding.

In carrying that idea still further we are in hope that some of these colleges, when they get a sire that has proven itself, and the dams are all on record, will take up this advanced work, one unit of it, the line breeding or outcrossing, so as to increase the opportunities of this work as much as possible, and we hope by this method of proving out the sires to be able ultimately to supply those herds that want to do the advanced work with proven sires. We hope to have enough of them in addition to our own work here, so we are spending no money whatever with the stations further than loaning them these sires, and holding conferences with them from time to time in regard to their plans. This, we think, is most vital, along with the nutrition work. We regard them as the two basic problems in dairy production, the importance of which can hardly be overestimated.

BELTSVILLE, MD., EXPERIMENT FARM—FOR CONSTRUCTION OF BUILDINGS.

The next item with which I am concerned is item 66, on page 65, which relates to the construction of buildings at the bureau experiment farm at Beltsville, for which we are asking \$30,000. We have had no buildings there in three years, and to properly take care of the increasing work, the increasing herd, we are badly in need of some of these buildings. In fact, we would like more buildings than are here provided for, but these will meet the conditions that are urgent.

In this bull barn there will be six breeding stalls, and we will keep there from four to six proven sires of great experimental value, and also of money value as well. We are handling those in a temporary way that is not altogether satisfactory for the safety of the animals, and we want to better provide for them.

We have a test barn now. What we mean by a test barn is a barn with box stalls so that the animals will be put through yearly official tests under conditions that are a little more favorable than the average stanchion, and that is the measure of efficiency of all animals; so that all of our cattle go through the test period at least twice, and possibly more often; but this is to make sure that the animal is given a fair chance. We must bear in mind all the time that the value of these animals is not based entirely on what they will bring, but on the accumulated experimental value, and we want fairly good buildings. Our buildings there are simple but durable, being of concrete, and we put them up as economically as we can, hiring the labor and putting the buildings up under our own supervision rather than letting them out on contract. We feel that if these buildings were built under contract at least 25 per cent additional would have to be added to the estimated prices.

We have a \$5,000 estimate for a boiler house.

Mr. ANDERSON. Let me ask you on this general proposition—of course, no one can estimate very definitely whether building materials will likely be any cheaper or not, but I know that a great many people are deferring building operations on the theory that building materials will be cheaper. Would it be possible to put this program over a year?

Mr. RAWL. It is not possible without hampering our work. We are badly crowded now. We need some of these things very badly. Of course, I realize what you say, and we prefer to do the least build-

ing possible; but there is little of this that can be deferred a year that will not handicap our work considerably. There is one item of a wagon shed and other machinery, for which we ask \$2,400, which we could omit better than anything else, for the simple reason that we can let the wagons and machinery stay out in the weather, but we do not like to do it if we can help it.

Mr. ANDERSON. I was out to that place five or six years ago, and it seems to me you have grown somewhat since then. It seemed to me you had a lot of room then.

Mr. RAWL. You mean for animals or equipment?

Mr. ANDERSON. For animals.

Mr. RAWL. We did have more room, but our herd has grown rapidly, not as rapidly as we expected, but the method of keeping these animals in this experimental work until they are old enough to be tried out, under surroundings in which they are grown, makes it necessary to keep the animals safe—all of them—because we want every heifer there tested out, and when they are tested out we can shift them to other herds, or the time may come when we can shift them to some of our cooperative work, or if they are not needed in that, they can be disposed of, but in order to carry on this breeding work as we desire our plant is not big enough. We ought to carry 200 head of cattle at least, ultimately, at any rate. That would be a question not of the immediate future but later on.

This experimental barn that we have here for this nutrition work is the largest item, and it is one that will contribute as much, if not more, than anything else here to the advancement of the experimental work. We want a special barn built, with equipment to collect feces and urine, to control temperatures, and to house feed that is used in these experiments, because an analysis has to be made of all this feed, and we want to do that systematically, and this equipment for this nutrition work that we would like to make permanent is the best equipment in the way of offering opportunities for experimental work that can be had. Our people tell us, for instance, that the ordinary method of sitting behind cattle 24 hours a day and collecting all the excrement probably has a bearing on the digestive processes. So, so far as we can remove abnormal surroundings from the cattle, we wish to do so in this barn. We are getting along without it at the present, but it will facilitate our work, and we need this equipment, as I say; we can not do without it without hampering our work considerably. We are having considerable difficulty to carry our cattle through this winter with the facilities we have, and take good care of them, as we must, in doing this important work.

Mr. ANDERSON. How many silos have you now?

Mr. RAWL. Four concrete silos.

Mr. ANDERSON. What do you want with two more on 160 acres?

Mr. RAWL. We have plenty of stuff to fill them with. We do not buy hay, as a rule. We produce all of the silage; and, in fact, practically all of our roughage. The principal feed we purchase is grain. We buy a little hay sometimes when it is needed, but more and more we are producing all the hay and silage we need. These silos are smaller than perhaps would be desirable, because it enables us to separate our silage and make the tests on it that are necessary in conjunction with all this feeding work.

FOR GENERAL ADMINISTRATIVE WORK, INCLUDING TRAVELING EXPENSES,
SALARIES, ETC.—BETTER-SIRES CAMPAIGN.

Mr. Mr. ANDERSON. Let us go back to the other item.

Mr. RAWL. In regard to that other item 67, on page 65, for the better-sires campaign, \$15,000, there is no specific sum devoted to that now. The bureau is conducting it out of its funds at the present time. However, the work now is getting under way on a considerable scale and funds are needed. In a general way, that has been a publicity campaign for better sires.

The bureau got out some striking publicity, that was sent to all the breeders, showing the tremendous losses in inferior sires, including certain very attractive posters, and made a definitely organized campaign to interest all organizations like, of course, the extension organizations of the States, the county organizations, the agricultural societies, the live-stock associations, the publicity agents, and so on, in trying to crystallize a nation-wide movement to destroy the scrub sire, and a great deal of good has been done. For example, two of our posters have been reproduced over 300 times by other associations who have gotten the cuts to make their own issues, and this campaign is playing up the idea of scrub-free counties and scrub-free areas so as to get rid of the scrub.

You may know that in this connection the department got out a little certificate that was to be signed and submitted to everyone who took the pledge to eliminate all scrub sires on his place. These certificates are signed, and it is an official document that is given in recognition of the pledge to eliminate all scrub sires. Three thousand one hundred and eighty-six of those have been issued. The holders of these certificates own in the neighborhood of 400,000 different animals, and this money is desired to foot the expense of enlarging this work.

The clerical work entailed is considerable, and we desire material of one sort or another, which we feel is the cheapest possible way of putting forward and making a hard drive on the use of better sires. This does not relate to dairying particularly, but it relates to all live stock and poultry, and the idea is to stimulate pride in every man in the country, and we think by putting up this little certificate he will get some recognition and it will create pride in joining the campaign to eliminate the scrub sires.

Mr. ANDERSON. Is there anything further?

FOR CONSTRUCTION OF VAULT FOR REFRIGERATION PLANT, BUREAU OF
ANIMAL INDUSTRY.

(See p. 26.)

Mr. RAWL. There was another item with reference to the refrigerating plant in the bureau.

Dr. MOHLER. On page 308.

Mr. ANDERSON. Is that the item you discussed yesterday?

Dr. MOHLER. Page 308, item 23.

Mr. RAWL. That is an item of \$25,000 to provide refrigerating facilities for the refrigerating plant of the bureau. At the present

time the bureau uses refrigeration in all of its dairy work and pathological work for preserving specimens, and, of course, a good deal of our laboratory work requires the control of temperatures, and we have quite an extensive need for refrigeration in all the laboratories of the bureau. This refrigerating plant originally was in the power house some 300 or 400 feet from the base of our laboratory. The bureau had a compressor in the general power plant. It was so far away that the loss in refrigeration in the line was so great as to make it inadequate entirely to take care of the laboratories and it seemed necessary to move it into the particular wing. You know we are in the east wing of the new building, Mr. Chairman. There is no place in this building to put it except under the sidewalk, that is in the sub-basement, in a very congested place. The uncertainty of a refrigerating plant, I might say, also makes it necessary that we have an auxiliary, that is two compressors. These compressors are so close together that chain drives have to be used, and they are jammed down right under the sidewalk, just to the side of the entrance to the building. It is the only place which is available.

It so happens that the intake for the ventilation of the building is in the immediate vicinity, so that if a leakage occurs the ammonia is pumped all over the building. It was placed there as the only possibility at the time, and it has been there for three or four years. We desired at that time to build out in the bank a place to house the compressors, right near the building. The Comptroller of the Treasury ruled that that was a building and was not authorized, and we therefore could not do it. This has been going on, as I say, for three or four years. Once in ever so often we have a leakage or blowout in the packing and the whole building is flooded with ammonia, because the intake of the ventilators, as I say, is quickly charged with ammonia, and it blows it all over the building, which is sometimes very injurious to laboratory work in progress. There is also considerable danger to the men who handle the machines because of the congested situation. If the packing should fly out while a man is in there he has only one method of escape. This might cost the life of an attendant at any time and should be remedied. Moreover the dampness prevents the use of automatically controlled equipment which would be very useful.

Refrigeration is essential in preserving pathological specimens that come in. Hundreds of specimens come in from time to time of every conceivable thing, specimens of diseased animals of one sort or another. Then, in our dairy work, our bacteriological work, a breakdown of three or four days sometimes is very costly, because it may ruin a lot of work, and it is very desirable to arrange this equipment in such a way as to avoid unnecessary breakdowns and unnecessary risk incidental to breakdowns.

Mr. ANDERSON. Do you propose to put this refrigerating plant, as I understand, in the bank at the east end of the wing?

Mr. RAWL. The east end of the wing; yes, sir.

Mr. ANDERSON. I can not see that that place is any more desirable than the place you have now.

Mr. RAWL. It will be entirely outside and, of course, entirely away from the building proper. It would have free atmosphere around it, and it would be 30 feet or so from the building. It is proposed to light

it with skylights. The only reason it was desired to put it in the bank was because we presumed we would not be allowed to put such a building up on the surface of the ground. The cost of landscaping would not be a very great item, and we would expect to cover this with dirt, putting skylights in the top. I think it can be made entirely dry and entirely satisfactory. Of course, it will cost more to put it in the ground than to put it on top, but there is no place on top of the ground around there where it could be put without either now or shortly becoming perhaps a nuisance or unsightly.

The refrigeration is transmitted from the compressors to the various rooms. These rooms are on the different floors of the building, and there is a pipe that carries the brine up to these different laboratories and distributes it.

Mr. ANDERSON. Then the refrigerator is not down here where the machinery is?

Mr. RAWL. No, sir; just the compressors.

Mr. ANDERSON. The refrigerating machinery, but the vaults are in the building?

Mr. RAWL. They are in the building, distributed along the second, third, and fourth floors. Putting this outside of the building will add a little waste to it, but it is not serious. Of course, the farther away you carry it the greater will be the loss. This brine is chilled in this room and pumped up and circulated around in these rooms. Some of them are kept at very low temperatures. We have a few rooms that we can get down below zero, if we desire, for any particular reason. Many of the rooms where the bacteriological specimens are kept are kept at more moderate temperatures, but all are controlled. Refrigeration is essential to laboratory work, in dealing with pathological specimens, and, in fact, in dealing with all bacteriological tests.

If I may say another word with regard to this whole dairy situation, I suspect I always appear enthusiastic and appear to forget that there are other important things to consider; at the same time dairying is such a big industry, it is so vital, that I am very anxious that it be appreciated and that everybody realize what a tremendous power it is. Our work in carrying out these processes serves as a clearing house where we try to aid materially, and do aid materially, in selecting the best ideas from all sources, and getting them out. In this research work it is often felt that this is a farmer's problem. It is, but it is a consumer's problem as well. If we can make Swiss cheese in this country, instead of having 80 per cent of it second grade or below, we can have 80 per cent of it fancy; if we can so stabilize the processes of these various products production will be increased, people will be induced to go into it, and when production is increased the price will come down. Every bit of this work, as I see it, is in the interest of the producer and consumer alike.

There are big wastes going on, and these wastes have to be absorbed by somebody, and that is the consumer. If we can get pure-bred sires in the United States we will interest a lot of people in stock raising, we will eliminate waste in stock raising, and that will cause more production and ultimately lower prices, so that all these things we are talking about are broadly in the interest of consumer and producer alike. The man who gets there first with bet-
ter

sires, the man who gets there first with a clean herd free from tuberculosis will derive some advantage, but in the long run, when this thing becomes thoroughly understood and thoroughly applied it will be as useful to the consumer as to producer. The man who gets there first and controls his hog cholera will get a great advantage, but in the long run hog-cholera control will produce more hogs in this country beyond the shadow of a doubt, and the increased production with less risk and loss of hogs will mean a reduced price for pork.

That is the basis of this work. This dairy industry is a gigantic industry which has grown up in 50 years. Fifty years ago the dairy industry was the industry of a hand churn at the back door. Now we have hundreds of millions of dollars invested in it. It is a big thing commercially and it is a big thing, because milk is perhaps the most essential of all human food.

Mr. ANDERSON. What do you think is the biggest thing that the Department of Agriculture can do for the dairy industry?

Mr. RAWL. The biggest single thing, sir?

Mr. ANDERSON. Yes.

Mr. RAWL. That is a pretty tough question, the biggest single thing. We can not single out anything, sir.

Mr. MOHLER. Increase the appropriation.

Mr. ANDERSON. I did not ask what is the biggest thing we can do for you.

Mr. RAWL. Not what is the biggest thing you can do for us, but what is the biggest thing we can do for the dairy industry?

Mr. ANDERSON. The biggest thing you can do for the country, or for the dairy industry, because what you do for the dairy industry will be in the interest of the whole country.

Mr. RAWL. The application of these things. I do not know whether we are right or not, but we have used our best judgment in concentrating our efforts on these problems that I have told you about, and others of a similar character that we felt were the most vital to the industry as a whole. Some of those problems are more striking than others. I said a while ago that breeding and nutrition work, to my mind, were most vital in production work. They are the bed rocks.

In manufacturing work we think the elimination of these great wastes and the introduction of manufacturing methods whereby we can manufacture the products that are now imported in large quantities, are, it seems to me, equally vital. We are asking for half a million dollars for this great big industry that is producing I do not know how much, but when you say \$4,000,000,000 a year of products, a half a million dollars devoted to these big fundamental problems is not much, Mr. Chairman. It is not much, considering the tremendous importance of milk as a food.

Mr. ANDERSON. I think I will have to ask you to come back next week and answer my question.

Mr. MAGEE. I am glad that you have told my friend, Mr. Byrnes, how to reduce the high cost of living.

Mr. RAWL. While these things are not going to revolutionize things in a day, a week, or a month, I do not think there is any

doubt but that they will increase production, and gradually help reduce the cost of living, and at the same time add to the returns to the producer as well.

In regard to your question, Mr. Chairman, are you going to pin me down and ask what the one single thing is? That would be very hard to say.

Mr. ANDERSON. I am asking you what do you think is the greatest thing that the Department of Agriculture can do for the dairy industry.

Mr. RAWL. I hope you do not mean to say the greatest single thing in terms of items like we have been talking about here this morning?

Mr. ANDERSON. Not at all.

Mr. RAWL. I could give you a statement that would cover the important items that have been mentioned here in perhaps general terms, but I have given you this morning what I believe to be the most essential group of things. We can screw that up another notch, if you want us to do it.

Mr. ANDERSON. All right.

Mr. HARRISON. Mr. Anderson, Mr. Rommel will present the justification for item 62, on page 57.

ANIMAL HUSBANDRY DIVISION.

Mr. ROMMEL. The work in animal husbandry covers all the production investigations in all lines of animal husbandry except the dairy industry: that is to say, beef cattle, swine, sheep, goats, horses, and poultry. The work centers around headquarters in Washington, with the experimental farm at Beltsville as our field laboratory near Washington, and certain stations in the field, which will be touched on as we go along.

We also have considerable work of an extension character in cooperation with the State agricultural colleges which will also be mentioned.

Do you want me to mention the suggested changes in the phraseology of the bill, or shall we take those up later?

Mr. ANDERSON. You may take them up after we finish.

Mr. ROMMEL. The estimate is \$462,000, an increase of \$159,180. The proviso has been eliminated for the expenditure of not to exceed \$20,000 for use in experiments in the breeding and maintenance of horses for military purposes, \$14,000 of which we are expending in that work this year. Congress at its last session gave the War Department an appropriation of \$250,000 with which to begin on a broad, Nation-wide scale the work of breeding horses for military purposes, which work has been under the direction of the Bureau of Animal Industry since the fiscal year 1913. We could see no reason why we should continue such work after the Army got started, so we proposed to them that we discontinue it as soon as the transfer could be arranged. They took such of our horses and personnel as they wanted, and so far as we are concerned this work will be entirely discontinued at the end of this fiscal year. We are going to ask you to let us have that \$14,000 for other purposes, but we will get to that in a minute.

PURCHASE OF IMPLEMENTS, MACHINERY, ETC., FOR EXPERIMENT FARM,
BELTSVILLE, MD.

The first item of increase mentioned in the notes is \$5,000 for the experiment farm at Beltsville. One portion of that farm adjoins the dairy farm and includes the land not used by the dairy division.

Mr. ANDERSON. That is about 220 acres?

Mr. ROMMEL. A little more than that. There is a total there of 480 acres, of which the dairy has 180. We have 300 acres, about 100 acres of which is in wood. The increase is desired in order to replace worn-out machinery and to add somewhat to the number of laborers who are engaged in the work on the farm. We have not bought very much farm machinery in recent years, for obvious reasons, and we have been pressed to make ends meet with the constantly rising cost of everything. The machinery that we have is pretty well worn out and ought to be replaced. We also find a need for increasing the number of laborers.

Mr. ANDERSON. How large a herd have you out there; have you any animals out there?

Mr. ROMMEL. Oh, yes; we have about 20 work horses, and then we have the experimental herds, such as hogs, of which there are approximately 52 brood sows—the number varies a little—we have a flock of 125 ewes—pure bred sheep—and chickens enough to enable us to hatch approximately 4,000 chicks. We have about 2,000 laying hens in our experimental flock. We have our laboratory there for the study of animal genetics and raise approximately 1,200 guinea pigs in the work of breeding. We have also a flock of 50 milking goats. Those are all the animals we have.

Mr. ANDERSON. You do not have any cattle there at all?

Mr. ROMMEL. We have no cattle. We have no room for them. Our beef-cattle work is carried on elsewhere. We fed steers at Beltsville during two winters, but the place now is just as full as it can be without cattle.

The following statement gives the number of animals at the experimental farm, including the young stock raised this year:

Horses.—One saddle mare, 3 driving horses, 8 work mares, 6 work geldings, stallion, 2 fillies, 3 colts.

Goats.—Thirteen milking does, 9 yearlings, 9 kids, 1 buck.

Sheep.—Eighty-five breeding ewes, 17 yearling rams, 25 yearling ewes, 100 lambs.

Hogs.—Sixty-five brood sows, 265 pigs, 13 boars.

Poultry.—One thousand eight hundred breeding chickens, 3,800 young chickens, 10 pigeons.

Guinea pigs.—One thousand head breeding stock, 500 young animals.

BEEF-PRODUCTION INVESTIGATIONS.

Item b shows an increase of \$57,532 for beef-production investigations.

Mr. ANDERSON. What are you spending on that work now?

Mr. ROMMEL. To this work we have allotted \$24,575. The estimates show an increase of \$57,532.

The work of beef production is carried on in the field, experimental work being conducted at McNeill, Miss., in cooperation with the Mississippi Experiment Station, and at Jonesboro, Ark.,

in cooperation with the Jonesboro Agricultural High School and the Arkansas Experiment Station.

Since 1913 we have been cooperating with the Office of Farm Management in studying the cost of the production of beef cattle in the corn belt. Some of that data has already been published, as you may have observed.

Mr. ANDERSON. I do not want to get into a general cross-questioning here, but may I ask you at this point: Is the cost of beef-cattle production determined separately and apart from other farm operations?

Mr. ROMMEL. We try to do that; yes, sir. We are trying to get at the cost of beef production independently of the cost of other farm operations. During the last year we have placed a man on the range to study range conditions and to study the ranchman's problems, a subject that has not heretofore been given the attention which it should receive. This man spends about half his time traveling through the range States, meeting ranchmen and getting in touch with range conditions. With this increase we propose to place two additional men in the corn belt on these cost of production studies, two additional men in the range States, in cooperation with the State experiment stations, in the study of range production problems, and to increase the scope of our studies at Jonesboro, Ark., and McNeill, Miss.

Mr. BYRNES. What are you studying at Jonesboro?

Mr. ROMMEL. At Jonesboro they have a herd of pure-bred beef cattle, which was established and is owned by the authorities of the school. We have added an assistant to their staff, and all the money we are putting up is the salary of this assistant. The work is designed to study in a broad way the problems of beef production in that section of the country.

Mr. BYRNES. Do you make an effort to communicate to others the results of those studies?

Mr. ROMMEL. Surely.

Mr. BYRNES. How do you do that—through what agency?

Mr. ROMMEL. By means of bulletins and contributions to the agricultural press and by personal contact with farmers, one of the most useful of the latter being what are called field days. For instance, suppose a carload of steers that have been fed in a certain way are about ready to go to market. The school or station will invite the farmers of that section to come in and they will be given a n opportunity to find out all about the methods of feeding, the cost of the rations used, and various other items of an incidental character.

Mr. BYRNES. Of course, that could benefit only those in the immediate locality.

Mr. ROMMEL. If it was allowed to stop there, it would, of course; but the work is given wide publicity through the State agricultural extension forces. The work at Jonesboro is conducted also in cooperation with the Arkansas State Experiment Station, a branch of the State University. When results are obtained they are immediately available to the Arkansas Experiment Station, and by its contact with the State extension people they are published over the State by the county agents.

The next item is an increase of \$3,000 for farm sheep investigations.

Mr. ANDERSON. Will you give us a little more in detail what amount you expect to use under this item?

Mr. ROMMEL. The cost of production studies in cooperation with the Office of Farm Management, it is estimated will cost \$10,000. It costs about \$5,000 a year to employ a man and keep him traveling.

Mr. ANDERSON. Does that man travel all the time on these cost-production studies?

Mr. ROMMEL. He travels about half the time, somewhere between six and nine months. It depends entirely on the volume of data he gets.

The average is about six months. A man is no good in this kind of work unless he is traveling. He would rot in an office. He gets data and brings them in, the data are tabulated, and the tabulation usually takes approximately the same length of time as is required to get the records.

Mr. ANDERSON. I do not want to go into this cost business, as I will go into it later; but I can not see anything in this cost proposition if it is nothing more than accumulating statistics as to the cost of production. A cost analysis is an analysis of operations as well as an analysis of actual costs. You will never get anywhere by a mere tabulation of what it is actually costing a man to produce certain things. He may be lazy.

Mr. ROMMEL. Surely.

Mr. ANDERSON. There may be a thousand things connected with his management which affect his costs, which the mere tabulation of cost figures will not give you.

Mr. ROMMEL. That is why in these beef cattle cost production studies we want men that are acquainted with those different conditions, in order to determine whether a man is handling his work as it should be handled. We have found that the mere collection of statistics goes only part way. Those statistics have to be analyzed, they have to be studied—studied by men that are thoroughly familiar with the different methods of producing the particular product that you have in mind.

FARM SHEEP INVESTIGATIONS.

The next item is an increase of \$3,000 for farm sheep investigations. We are spending this year \$5,000 in farm sheep investigations. I want to say by way of explanation that this item is distinct from that for the maintenance of the Beltsville farm, the item for farm maintenance being separate, as far as it is possible to make it separate, from the conduct of the research work conducted on the farm. In other words, this \$8,000, if granted, will be used for the research work in farm sheep problems at the experiment farm at Beltsville, and at the Morgan horse farm at Middlebury, Vt. The principal item of study at the experiment farm at Beltsville is that of the maintenance of a flock of sheep under intensive conditions.

The land that is being devoted to the flock of sheep at Beltsville supported 44 ewes and 33 lambs in 1916. To-day we can carry 100 ewes and their lambs on the same ground. We are studying other problems such as the practice known as "fleshing the ewes," having them gaining rather rapidly in flesh just before breeding. We have

learned that the secret of success is in putting the ewes on limited feed after they are bred. If you continue heavy feeding after they are bred you will not get any noticeable increase in your lamb flock. You get the best results if, as soon as it is known that the ewes are safely bred, you take them off heavy grain feed and let them have a normal ration, such as a rather short grass pasture.

We are also planning at Beltsville to increase the number of breeds, not, however, beyond the carrying capacity of the land. We have been criticized somewhat because we have nothing but Southdowns. Our Southdown flock is conceded to be the best in America.

There have already been three grand champion wethers at the International Live Stock Expositions from that flock, sheep that the bureau bred and sold to exhibitors to be fitted, conditioned, and shown. We want to have just as good a flock of Shropshires as we have of Southdowns. We want to have just as good a flock of Hampshires, and there is no reason why we should not have about 50 of each breed that any sheep breeder in the country would be proud to see.

There has been a good deal of criticism of experimental flocks in that they are composed of such small numbers. The farmer will say, "You have only got a dozen sheep there." "I am not interested in seeing a dozen sheep." "I want to see 40 or 50 or 100 sheep." That is why we are figuring on about 50 ewes of each breed. We are not plunging into this thing. We have a little start with the Hampshires. Four Hampshires were purchased just the other day as a start for our Hampshire flock. We want that broadened out. We also have six Corriedale ewes from the United States sheep experiment station in Idaho. We wish to see what they will do under eastern farm conditions.

RANGE SHEEP INVESTIGATIONS.

The next item is an increase of \$45,900, for range sheep investigations. This work is carried on at the United States sheep experiment station in Clark County, Idaho. The station was established by Executive order in 1915, a portion of the public domain that seemed desirable being set aside for the purpose. It is located in the northeastern part of the State, in a section that always has been and probably always will be grazing land, very high and dry, with a rigorous, windy, severe, and unpleasant climate. In 1917 we moved the experimental flock there from Wyoming where they had been since the work began in 1906.

The work has been steadily progressing. We have, at present prices, I should say, about \$25,000 worth of buildings. The buildings cost us approximately \$15,000. What we hope to have eventually is a flock of commercial size that any sheep ranchman can visit, and see being worked out there the same sort of problems as he has himself.

To illustrate: The general practice of sheep men in that section of the country is to move their ewes in the fall down to the alfalfa tracts, as they call them, the alfalfa-growing sections on the Snake River. That necessitates a railroad journey, or a long trail over land. The sheep are put on alfalfa and hay, and if the hay holds out they come

back "soft." If the hay does not hold out they have to be brought back at once probably before the late spring storms. The system has its disadvantages.

This year we are doing what probably no ranchman in that section has ever done before, at least since very early days. We are maintaining our flock right on the station range, keeping them at home. We plowed some 400 acres of land that seemed arable, finding little valleys here and there where there was a minimum amount of rocks—it is a very rocky country—and we put in crops. This year the station grew 400 tons of sunflower silage, some corn, and other crops, such as feterita, sorghum, etc. Next year we hope to be able to grow some rye or wheat hay. If we can work out a system whereby a ranchman can grow his own roughage we will have done something for that northwestern range country that will be of untold value to the sheep growers. Last spring, for example, our hay ran out down on the Snake River, and we had to send the flock back just before one of those terrific late winter storms. They had two winters, one that commenced in October and quit in the middle of December, and another which began in the middle of January and quit in May. The finale of that second onslaught of winter struck our sheep shortly after their return to the station. We had a lamb crop last year on the station of a little better than 90 per cent. It is very doubtful whether the lamb crop of ranchmen who ranged under the old-fashioned methods was better than 50 or 60 per cent. The sheep came back soft and hungry, and landed off the cars to face a belated blizzard. If they had been on the home range, with adequate feed and shelter, they would have been much better able to resist the storm. As it was, heroic efforts pulled the Government flock through, but nothing could have saved us from very heavy losses if we had not had some shed protection.

Certain additional buildings are needed. The horses are quartered in the lambing shed. The horses are a nuisance and an annoyance to the sheep and their attendants, and should be gotten out of there. The building was put up for shearing and lambing and other purposes incidental to handling the flock, and should not be used as a stable. We are asking for \$3,000 to put up a horse barn to get the horses by themselves, where they belong.

Mr. ANDERSON. How many horses have you?

Mr. ROMMEL. Two saddle horses and 14 work horses. Then, in connection with this matter of handling the sheep on the range during the winter we want to build another winter headquarters. We had \$8,000 this year for equipment, and out of that we have erected a winter headquarters where we have a little shack for the shepherd, a silo, and a shed where the sheep can be sheltered from storms. We want another one. The range covers about 28,000 acres, of which we are actually using about 15,000 to 20,000 acres. By separating the headquarters a few miles and establishing the flock partly at one place and partly at another we can make the most economical use of the winter range. The man will have his feed there and his own outfit. The little headquarters we built this year cost \$1,750, including the silo. The shepherd can take the sheep out on pleasant days during the winter when it is not storming, and we estimate that with such an equipment we will be able to maintain the sheep on the range

during the wintertime, except for possibly 60 days. The next item in the range-sheep project is an extension to the lambing shed. The purpose of that is to enable us to lamb under shed. If you lamb on the range you have to wait until after the spring storms.

Mr. ANDERSON. Now, before you go any further I would like to ask you this question. You have in your notes the statement:

The increased funds recommended will make possible what is regarded as a necessary development of this station, namely, that the size of the flock be brought up to 4,000 ewes at the earliest possible date in order that four bands of ewes may be maintained and problems worked out on a commercial scale.

Now, the question I want to ask you is whether these detailed items of expenditure which follow are based upon that development program or upon the number of ewes you have out there now?

Mr. ROMMEL. The first five items are based on the flock as it is at present. The other items are based on the flock at the full 4,000 complement. I have a suggestion to make when I get to that item, if I might defer it.

Mr. ANDERSON. All right; I just wanted to know upon what the item was based.

Mr. ROMMEL. I have that thought in mind and I will refer to it again.

Now, in regard to this matter of the lambing sheds, it is highly important, because one of the necessities for successful range-sheep management is early lambing. The lambs that come late do not grow to the weights of those that are lambed early, and they are not so profitable. Lambs can be dropped under shed as early as February. If we have adequate but simple shed equipment and can lamb in February and March we will be able to show people the latest and most progressive ideas in range-sheep management. We have not yet built a dipping vat. That item is included in the estimate for the lambing shed, which includes the necessary extensions to make the lambing shed complete. Then we have an item of \$3,000 for a reservoir for fire protection—"for storage reservoir and fire mains, \$3,000."

So far we have gotten along without that item. We have buildings that have cost us about \$15,000, and are worth at present prices at least \$25,000. We have such fire protection as we can provide, but it is not adequate, and we would like to put in a storage reservoir of about 100,000-gallon capacity, put it on the hill above the buildings, pump from the well, fill it, and put in fire mains, so that we will have fire protection. This item of \$3,000 is really for fire insurance. The item of \$5,000 for the superintendent's residence is to improve the living conditions with which the superintendent has to contend. As I said a while ago, it is not a nice country to live in: the climate is very disagreeable; the wind blows very hard about half the time; dust storms are frequent; it is a hard country on men and it is infinitely harder on women and children.

Mr. ANDERSON. How far are you from the railroad station?

Mr. ROMMEL. Six miles.

Mr. ANDERSON. How close is the nearest town?

Mr. ROMMEL. The nearest town is 6 miles away. It is the town of Dubois. The superintendent is now living in a building which also is used as an office and the headquarters of the ranch cook.

Mr. ANDERSON. What did that building cost?

Mr. ROMMEL. \$4,000, as I remember it. This building that we propose to put up would not be as elaborate a building as that, because the present one is superintendent's quarters, his office, the cook's quarters, and the laborers' dining room.

Mr. ANDERSON. How many men have you employed now?

Mr. ROMMEL. Six laborers, one cook, and the superintendent. We do not have a very large force. The number increases during the lambing season and during the shearing season. Now, I will take up the other item to which I referred a moment ago. We have these three items, labor \$5,550, hay \$20,000, and grain \$4,100, making a total of \$45,900, including the building items. The three items which I have just read total \$29,650. Those items are based on the proposed complement of 4,000 ewes. We know that we will have to have additional labor. There is no question about that. We know that we will have to have additional grain, because we can not grow it; but it is an open question about the hay. The item of \$20,000 for hay was put in to be safe. Frankly, I am inclined to think that if we had known as much when we made up the estimates as we know now that item would not have been \$20,000. We did not know then how successful our crops were going to be, nor did we know that hay would be as cheap as it now is. There is just one element of uncertainty. We have not found out yet that we can grow hay. We can grow good silage. I am going to suggest to you, if a suggestion of possible reduction of the item is desirable, that we might be able to carry along with \$10,000 for hay.

Mr. ANDERSON. All of these items are based on the larger flock?

Mr. ROMMEL. Yes.

Mr. ANDERSON. Where do you get your hay? Do you ship it in?

Mr. ROMMEL. Some of it is shipped in, and some is hauled in. There is an alfalfa section about seven or eight miles west of us, and those farmers can haul hay over to us. We can not get any water at the station except by pumping. There is only a little ditch that runs across one corner of the ranch, but no water has its origin on the station.

Mr. ANDERSON. There is no running water on this tract at all?

Mr. ROMMEL. Not at all, except this little ditch that runs across the corner of the station, and we do not own it. It was put there by private parties years ago, who have prior rights. We own the land, but the water belongs to them. We have studied that matter all out and there is no possibility of getting water or of irrigating the land except by pumping.

FARM SHEEP DEMONSTRATIONS.

The next item is an increase of \$5,000 for farm sheep demonstrations. We are spending \$30,000 this year on farm sheep demonstrations. We have not been able to do all in connection with that work that we would like to do and we are asking for \$5,000, so that we may place a few additional men in the States in cooperation with State extension divisions on work pertaining to sheep husbandry.

Mr. ANDERSON. You are spending \$30,000 on sheep husbandry?

Mr. ROMMEL. Yes, sir; we are spending \$30,000 on sheep husbandry in the current year.

Mr. ANDERSON. In what way is that connected up with the agricultural colleges and extension work generally?

Mr. ROMMEL. We appoint the sheep specialists, and they are assigned to the extension staffs of the agricultural colleges. They are a part of the staff. In every case the college pays all the travel expenses, supplies all clerical help, and in many cases they add to the salary paid by the department. These men are engaged in work unusual to men attached to the extension divisions. In other words they are sheep-husbandry experts.

PORK PRODUCTION INVESTIGATIONS.

The next item is an increase of \$6,338 for pork production investigations. We are spending \$12,507 on that item this year. The work is carried on at the experiment farm at Beltsville. Some of the results that we have obtained there are interesting, and we would like to supplement them to bring them out somewhat. For example, the animal husbandry division worked out in cooperation with the Bureau of Chemistry and the Bureau of Fisheries, the value of fish meal and other fisheries by-products as a supplemental hog feed. This work began some eight years ago, shortly after the establishment of the Beltsville farm. There are on the Atlantic coast probably 125,000 tons of various kinds of fish scrap produced every year. Until our work was started none of that had been used in feeding hogs to any extent, but was used for fertilizer.

Now, it is more valuable as a hog feed than it is as a fertilizer, and, furthermore, the fertilizer value of the hog manure after hogs have been fed on fisheries by-products is very greatly increased so that we are adding to the wealth of the Nation by working out the value of these fisheries by-products. Two years ago there were about 5,000 pounds of fish meal put on the market as hog feed as a direct result of this work. Last year the amount was 7,500 tons, and this year it is estimated to be 15,000 tons. Last May it was for \$105 a ton, and the price now is from \$60 to \$75 a ton. It is just as valuable as tankage.

Mr. ANDERSON. What is the difference in price?

Mr. ROMMEL. The price is practically the same. The supply of tankage is limited. Corn and tankage has become the standard hog ration in the corn belt. Our standard hog ration at Beltsville is corn and fish meal. We can get it very near by, and it is not necessary to ship tankage. Another interesting problem we have worked out is how much it would cost to feed lice.

Mr. MCGEE. What kind of lice?

Mr. ROMMEL. Hog lice. It costs just about 2 cents a pound more to feed a lousy hog than it does to feed a hog that has no lice. It costs practically \$4 a hog to feed your hogs if they are lousy, and it costs anywhere from 5 cents to 10 cents per head to clean them of lice.

Mr. ANDERSON. Well, you do not want to do any more work along that line?

Mr. ROMMEL. No, sir. What we want to do now is to take up the question of what it will cost to feed worms. We know how much it costs to get rid of the worms, but we do not know how much

it costs to feed them. We have no information on that. We want to take that up and find out.

Mr. ANDERSON. I am just wondering how valuable that information is after you get it.

Mr. ROMMEL. Well, we do not know how much the loss is from lice and worms in hogs, but it is enormous, and the more exact you get that information the more likely a farmer is going to be to clean up his animals. One of the things that hampers the bureau in all its work on the eradication of diseases and pests has been the lack of definite information.

Mr. MAGEE. Worms are an inside product?

Mr. ROMMEL. Yes, sir. They are in the intestines. Now, in tick eradication we have never been able to establish successfully, with experimental data to back us up, how much it costs on the average to feed ticks on cattle. It has been worked out with dairy cattle, but we have never had satisfactory experimental data with beef cattle, such as these louse data. Such studies do not cost much. To extend these studies somewhat and broaden out studies of fish meal and similar products are the principal subjects to be taken up with these proposed increases in our funds for pork production investigations.

SWINE EXTENSION WORK.

Now, the next item is an increase of \$16,750 for swine husbandry extension work. The expenditure this year is \$23,250. The swine husbandry extension work is carried on under the same principles as other extension work under our direction, the specialists being stationed with the extension departments of the agricultural colleges. One of the principal activities of the men in swine husbandry extension work is to assist in the development of the pig club work particularly—now that pig clubs are so general—to supply club leaders with definite and accurate information on swine husbandry. We have found it necessary, in order to answer problems that are constantly coming up in this connection, to make certain drafts on the money available for swine husbandry extension work in order to carry on experimental work, and if this increase is granted we will be able to get back to normal and put about six additional specialists in the field.

FARM HORSE AND MULE INVESTIGATIONS.

The next item is \$9,000 for farm horse and mule investigations. The present expenditure is \$4,350. We propose, with your permission, gentlemen, to get this \$9,000 from the \$14,000 that we are spending this year on military horse breeding. What we want to do with this money is to conduct research work on the economy of farm power in cooperation with the Office of Farm Management and the Bureau of Public Roads. We have a departmental committee of which the chairman is the chief of the Office of Farm Management, the other members being the chief of the Bureau of Public Roads and myself. The committee has worked out a project for the study of farm power. It was organized for the purpose of avoiding duplication. Anybody who starts into that sort of thing and does not

plan to avoid duplication is going to have a great deal of duplication. Under our arrangement the purely farm management features are studied by the Office of Farm Management; the engineering features are studied by the engineers of the Bureau of Public Roads; and the questions of animal husbandry, such as the raising of colts, the handling of horses, etc., are studied by the Bureau of Animal Industry. Problems that are neither one nor the other can be worked out by the committee and a decision made as to where and how they should be studied.

There is no question at all but that the question of farm power is of the utmost importance to farmers. What is the farmer going to do to supply his needed farm power? Is he going to get a tractor or is he going to use horses? If he is going to use horses, is it cheaper to buy horses or to grow them? A thousand and one different questions of that kind come up for decision. We have already some data which will be available for publication within a few weeks.

Mr. ANDERSON. Is not that a problem which revolves around the economical and social conditions that exist on each particular farm?

Mr. ROMMEL. Not necessarily.

Mr. ANDERSON. Is it not a question of production cost in the individual instance?

Mr. ROMMEL. I would hardly say that. There is an element of psychology involved there that is even more important. I grant you that the economic aspects are very important, but you can take two farmers side by side, one of whom will make a success by using only horses, and the other will make a success by using tractors.

Mr. ANDERSON. Well, that is all in the man. You can not solve that factor by the application of any formula.

Mr. ROMMEL. No; but it is a question of the size and shape of the farm, the contour and topography of the country. The question of economics is the basic question in that connection. That is why we have this subject divided up the way it is, and the reason why it is headed by the chief of the Office of Farm Management. The question of farm management is deeply involved, but whether it is a question of economics in each particular farm I do not know that I can quite agree with that viewpoint.

Mr. ANDERSON. I am not asserting that that is the case; I am asking you for information.

Mr. ROMMEL. Here is something that we have already found, and apparently it can be followed up, and that is that the rôle of the tractor in up-to-date farm operations depends upon two things. In the first place, it enables you to get your crops in in a hurry; you can work the tractor 24 hours a day if you have to, with shifts, and you can not do that with your horses. The second thing is that that tractor supplies belt power that can be used as auxiliary power on the farm. Now, if a man is rushed and tries to put in 24 hours a day, he will either have to double up his horsepower or he will kill his horses, but you can run a tractor right along if you have the men to look after it.

Mr. MAGEE. You do not think that horses will ever permanently be displaced, do you?

Mr. ROMMEL. No, sir; not even in the cities.

Mr. MAGEE. You do not see many in the cities now, do you?

Mr. ANDERSON. You will see more of them if the price of gasoline keeps up.

Mr. ROMMEL. I understand that the business houses and commercial truckers, who went in for motor trucks, are already considering that point. Now, of course, Chicago is not a fair example on account of the congested conditions in the Loop district, it is found that traffic can not move any faster within the Loop with motor trucks than with horse-drawn trucks on account of the congestion. On the other hand, take Baltimore, which is hilly and which has many of its streets paved with asphalt, the men who prefer to use horses there find it difficult on account of the slippery condition in the wintertime and in wet weather. Last winter, however, New York City would have been absolutely starved out on account of the heavy snow if it had not been for the horse-drawn trucks. The only thing that saved the city's food and fuel distribution was that a certain number of truckers, who were supplied with horses, could get through the snow while the motor trucks could not. The man that is to see the last horse has not yet been born.

Mr. MAGEE. Well, they are going pretty fast.

Mr. ROMMEL. There is a curious thing in the census. Wherever you can get a line on the farms that do not breed very many horses, the Southern States, for example, in which they use a larger proportion of work stock than breeding animals, both horses and mules, and in every case they are found to have increased the number in 1920 over 1910.

Mr. ANDERSON. That would be natural in the development of southern agriculture anyway.

Mr. ROMMEL. That just shows to what extent those farmers have been using horses and mules on the farms. There has been an increased use of horses on the farms in spite of the increased use of tractors. Some of the Southern States are in a peculiar situation. A survey, recently made by the Florida authorities, indicates that they have a much larger number of days when tractors are used on farms in Florida under normal conditions than in Iowa or in Pennsylvania. That is due to the open weather and the frequency of plantings.

FOR MORGAN HORSE-BREEDING INVESTIGATIONS.

The next item is \$5,000 for Morgan horse-breeding investigations. That item we also propose to obtain from this \$14,000, which we have for military horse breeding.

Mr. ANDERSON. You are like the packers; nothing gets away.

Mr. ROMMEL. Now, that makes up the \$14,000.

Mr. ANDERSON. What are you spending on this Morgan horse work now?

Mr. ROMMEL. \$20,000 this year; \$5,000 of this money that we are allowed to use, if it was necessary, for military horse breeding, going to be used for Morgan horse breeding investigations.

Mr. MAGEE. Have you any items where you ask for a decrease?

Mr. ROMMEL. Yes; this \$14,000 item.

Mr. ANDERSON. What are you going to use this additional \$5,000 for?

Mr. ROMMEL. We want to use that \$5,000 in order to do the same thing as we propose to do at Beltsville. We want to replace some worn-out farm machinery and also to erect a cheap shed that could be used in the winter for training horses under saddle. If the Morgan horse has any future, its future is a saddle horse. As a driving horse on the road the Morgan horse is gone.

Mr. ANDERSON. Mr. Rommel, that proposition has been going on since 1906. We certainly ought to have found out by this time if there is anything in the Morgan horse. If there is anything in him let us develop it. If there is nothing in him let us quit. If it is going to take another 14 years to find out, I am against it.

Mr. ROMMEL. The probabilities are this, Mr. Chairman, that if the Government does not maintain its stud of Morgan horses it will be only a comparatively short time before the Morgan horse is as dead as the dodo—gone the way of the Conestoga horse.

Mr. ANDERSON. Is not that a pretty fair indication that it has no place in our agricultural or social life or anything else?

Mr. ROMMEL. I hardly think so.

Mr. MAGEE. What do you mean when you say he has gone as a farm horse but may be used as a saddle horse?

Mr. ROMMEL. I said he is gone as a road horse. The Ford has driven him off the road just as it has driven the trotting horse off the road.

Mr. MAGEE. That is what you mean when you say he is gone as a road horse?

Mr. ROMMEL. Yes, sir: as a driving horse. Driving horses are things of the past. But there is a place on New England farms for Morgan horses. One of our horses was in the endurance run from Fort Ethan Allen to Camp Devens, Mass., in October last, and finished seventh, coming through in good shape. Any horse that goes through in good shape is a good horse. One of the largest Morgan breeders in the country is supplying stallions for ranch purposes to breed cow ponies.

Mr. ANDERSON. Is this farm used for any purpose except developing Morgan horses?

Mr. ROMMEL. We have a flock of sheep there.

Mr. ANDERSON. How big a farm is that?

Mr. ROMMEL. About 950 acres.

Mr. ANDERSON. Where is it located?

Mr. ROMMEL. Near Middlebury, in Addison County, Vt.

FARM POULTRY INVESTIGATIONS.

The next item is an increase of \$5,000 for farm poultry investigations, on which we are spending this year \$29,863. Most of the work is conducted at the Beltsville farm. We want this additional \$5,000 in order to get our incubation studies under way. The laboratory building has been finished, but it has not been equipped. What we are especially anxious to study there are questions pertaining to incubation, particularly the causes of chicks dying in the shell about the seventeenth or eighteenth day. The loss is enormous. An old mother hen will be given 13 eggs and if they are all fertile the chances are she will hatch out 13 chicks. You can put 240 eggs into an incubator and

if they are all fertile you are lucky to get 120 chicks. There has been an enormous growth in the incubator industry, the day-old chick industry, the commercial hatcheries, and everything of that kind. It is mounting constantly every year, and nobody knows why such an enormous percentage of chicks die in the shell. We want to get the studies under way so that we can find it out, and \$5,000 will enable us to do it.

Mr. ANDERSON. What is the total expenditure now for poultry work?

Mr. ROMMEL. All poultry work?

Mr. ANDERSON. Yes.

Mr. ROMMEL. \$58,640 is the total in the bill, and the increase will bring it up to \$78,300, including the item that follows:

FOR POULTRY EXTENSION WORK.

The next item is for the boys' and girls' club work, to get it back to normal. It was badly disorganized during the war, because we had to draw on the poultry club appropriation for experimental work in order to answer questions that nobody else could answer, and we would like to get that back so that we can train additional men in the poultry club work.

Mr. ANDERSON. Are there any of the State stations doing poultry work?

Mr. ROMMEL. Of what character?

Mr. ANDERSON. Of any kind.

Mr. ROMMEL. Investigational work is being done at Cornell, Indiana, Wisconsin, Iowa, Missouri, Kansas, and other stations. Our investigations are designed in such a way that they will answer questions and cover a field that are national in scope. We avoid in every way duplicating work which the States are equipped to do. There is no reason at all why we should spend money simply to be spending it. That is something we have always tried to avoid, and I think our record will show that we have avoided it. Probably the largest and most important single piece of work that has been done at the experimental farm in poultry production has been the study of the possible combination of utility and standard production. When we started the flock we required that all the birds must be standard; that is, they must have no disqualification under the American Standard of Perfection.

The stock has been handled in such a way that we are getting a considerable number of good, high producers. We have birds in whose pedigrees we can show you a 200-egg hen in every generation for at least two generations back. At the same time those birds are good enough to go to Madison Square Garden show and win if shown in the open classes. The question of combining high production with standard excellence is one of the fundamental principles of our work and one which is being carried on nowhere else. Every bird there is pedigreed. We know its ancestry, both sire and dam. There is no guessing about it. The pedigrees of some birds can be tabulated back for five generations. We have flocks of White Leghorns, White Plymouth Rocks, Barred Plymouth Rocks, White Wyandottes, Rhode Island Reds, a few Buff Leghorns, and we are

AGRICULTURAL APPROPRIATION BILL, 1922.

by the meat breeds, such as the Brahma, Cornis

ow many years do you figure to a generation?

In poultry it is one year. The pullet is hatched o
I get progeny from her the next year.

is all on the items of increases, Mr. Chairman.
fer back to the language of the bill and expla
ms. On page 57, the first amendment in brackets
of the amount. The next item is the omission of t
d to the experiments for breeding horses for mi
at goes out.

iso is purely clerical. There is a change in the ite
ling, raising the amount from \$58,640 to \$78,3
sion of the item of \$8,000 for equipment at the she
on and a substitution of these words: "\$15,000
mediately available for the erection of necessa
e United States sheep experiment station in Cla
The word "Fremont" is stricken out and the wo
ted, because that county was divided some time ag
is called "Clark" and includes the sheep experime
s boundaries. The language pertaining to buildin
it station is simply a duplication of what appea
ragraph, and is accordingly stricken out. Now,
00 be made immediately available for buildings,
t to lose an extra season, as will be the case if t
ecome available until July 1, 1921. If we are goi
we think it would be economy to let us have it
passes so that we can get the benefit of the spri
which will enable us to have the new lambing sh
n, and the winter quarters in shape before anotl

. Is there anything further, Mr. Rommel?

That is all I have, Mr. Chairman.

. That completes the Bureau of Animal Industry

TUESDAY, DECEMBER 21, 1920

BUREAU OF PLANT INDUSTRY.

**DR. E. D. BALL, ASSISTANT SECRETARY OF AG
WILLIAM A. TAYLOR, CHIEF OF THE BURE
DUSTRY; AND DR. KARL F. KELLERMAN, AS
OF THE BUREAU OF PLANT INDUSTRY.**

AND INCREASES IN SALARIES—ELIMINATION OF LOW GRADE POSITIONS.

The first item, relating to the salary of the ch
ll be discussed later.

rom the second item on, covering the statutory r
ljustment through which certain low-salaried pla
which it has been found difficult to use effective

A stream of unsatisfied and unsatisfactory occupants has been flowing through them, and in place of those, through the provision of certain increases, the net result of the changes suggested is a reduction of \$5,920 in the appropriation. The changes start with note No. 1, on page 69, where an increase in the salary of the assistant to the chief of the bureau of \$500 is proposed. The present occupant, Mr. James E. Jones, a man of long service and high efficiency in the bureau, is amply deserving of the increase that is suggested. The same for the officer in charge of publications provides an increase of \$250.

Mr. ANDERSON. Just a moment before you pass the executive in charge of seed distribution. Does this have to do with the Congressional seed distribution?

Dr. TAYLOR. Yes, sir.

Mr. ANDERSON. Well, we cut that out. Why do you keep the man there?

Dr. TAYLOR. Awaiting the final determination of Congress. We have had several experiences with the seed distribution within my short life and recollection. The executive assistant is an able and useful man. His present work relates entirely to the Congressional seed distribution.

Mr. ANDERSON. Well, if the seed distribution goes out, then this one ought to go out.

Dr. TAYLOR. Unless we should continue him in other work in the bureau.

Mr. ANDERSON. Well, if you put him in another place, that is right, but the place ought not to be there if the work is not there.

Dr. TAYLOR. That is true.

Mr. HARRISON. The language in there with reference to seed distribution ought to come out. It was intended to cut that out, but it slipped in through an error.

Dr. TAYLOR. Under note No. 4 the officer in charge of publications increased from \$2,250 to \$2,500.

Mr. ANDERSON. Now, I understood that we have all this publication business over in one bureau?

Dr. TAYLOR. The construction of the manuscripts remains in the executive bureaus, and this man is the plant-industry editor and printer of manuscripts.

Mr. ANDERSON. He is really an editor?

Dr. TAYLOR. That is his function; yes, sir. He is essentially an editor in large part, although he does also other closely related lines of work which we have to have done in the bureau. Note No. 5 is a change in the title merely, the omission of one landscape gardener \$1,800, this item being revised by item No. 6, a designation of one man of gardeners at the same salary.

Mr. BYRNES. What is the object of the change?

Dr. TAYLOR. To more accurately designate the duties that the man is performing. Note No. 7 relates to the officer in charge of records, and involves an increase from \$2,250 to \$2,500, an increase of \$250. Under Note 8 we proposed four executive clerks at a salary of \$2,400 in new places, these places and those places recommended in items 15 and 16, on the same page, being in lieu of the places dropped in items 25, 26, and 27.

Mr. ANDERSON. Is it not possible to get this executive clerk business on some comparable basis? I notice going through this estimate that we have executive clerks at \$2,000, \$2,250, and \$2,400.

Dr. TAYLOR. There are material differences in the responsibilities carried in different bureaus under the same general title. Our difficulty in recent years has been to hold a sufficient number of experienced, qualified executive clerks to supervise and lead the work of the younger and newer clerical employees.

Mr. ANDERSON. While we are on this subject I wish you would prepare for the committee a statement showing just what promotions and increases of salary are involved in this rearrangement, with the clerks separately, and the various other classes—messengers, laborers, and gardeners—so that we can see just what you have done.

Dr. TAYLOR. I can furnish you that now.

NOTE.—In the estimates for the next fiscal year it was proposed to create certain new positions on the statutory roll of the Bureau of Plant Industry in exchange for a larger number of lower-priced positions, with the result of a decrease in the amount of the appropriation. If the additional places recommended should be allowed, it would enable the department to make the promotions as listed below:

- 1 clerk from \$2,000 to \$2,400 per annum.
- 3 clerks from \$1,980 to \$2,400 per annum.
- 1 clerk from \$1,800 to \$1,980 per annum.
- 4 clerks from \$1,600 to \$1,800 per annum.
- 7 clerks from \$1,500 to \$1,600 per annum.
- 14 clerks from \$1,400 to \$1,500 per annum.
- 3 clerks from \$1,320 to \$1,400 per annum.
- 11 clerks from \$1,200 to \$1,400 per annum.
- 3 clerks from \$1,200 to \$1,320 per annum.
- 14 clerks from salaries ranging from \$1,000 to \$1,100 per annum to \$1,200 per annum.
- 14 clerks from \$900 per annum to salaries ranging from \$1,000 to \$1,100 per annum.
- 35 laborers from salaries ranging from \$540 to \$660 per annum to \$720 per annum.
- 5 laboratory aids from \$900 to \$960 per annum.
- 5 laboratory aids from \$840 to \$900 per annum.
- 5 laboratory aids from \$720 to \$840 per annum.
- 3 gardeners from \$1,100 to \$1,200 per annum.
- 3 gardeners from \$900 to \$1,100 per annum.
- 12 gardeners from \$780 to \$900 per annum.

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Mr. HARRISON. Did you indicate the number of total reductions in places? There is a net reduction of 42 places.

Mr. BYRNES. Do you mean 42 places have been dropped?

Mr. HARRISON. Dropped, yes; an actual reduction in the amount appropriated of \$5,920. In other words, we are dropping 169 places and substituting for them 127, and the decrease is \$5,920.

Mr. BYRNES. You are dropping the 26 clerks at \$900 and 1 clerk or draftsman at \$900 and 11 clerks at \$840 for the reason that you can not fill those grades?

Dr. TAYLOR. We can not keep them occupied. We get a certification, we get an occasional acceptance of a tendered appointment, we get a short period of service and a resignation, and then we go through the same process again. It is an exceedingly expensive and necessarily inefficient method of doing business.

Mr. BYRNES. You think it would increase the efficiency of the bureau to have fewer clerks at higher salaries?

Dr. TAYLOR. Yes, sir; and the estimate as presented covers that specific proposal merely. The remainder of the suggested changes in the statutory roll—

Mr. HARRISON (interposing). They will be covered in the statement you are going to insert in the record.

Dr. TAYLOR. Several of them are changes in designation merely.

Mr. ANDERSON. What will your entrance salary be for clerks under this new arrangement?

Dr. TAYLOR. Our entrance salary for clerks in the Bureau of Plant Industry will be \$1,200.

Mr. BYRNES. You have 30 at \$1,000 here.

Dr. TAYLOR. \$1,000; I beg your pardon.

Mr. ANDERSON. You mean, inclusive of the bonus?

Mr. BYRNES. \$1,240 with the bonus.

Dr. TAYLOR. Yes, sir; that is what I mean. The bonus, in our practice, is a subsequent determination. If the clerk's service is satisfactory he gets the bonus.

Mr. BYRNES. You do not give him the bonus at once; you determine that in 30 days?

Dr. TAYLOR. In from 30 days to 6 months.

Mr. BYRNES. Have you got any considerable number of clerks who are not earning the bonus?

Dr. TAYLOR. Not at any one time.

Mr. ANDERSON. And man or woman who can not earn the bonus ought not to remain in the service.

Dr. TAYLOR. We are frequently not able to hold the good ones even with the bonus. They will not stay. Then we have changed the designation in item 29, where the designation of these positions is changed from "messengers or laborers" to laborers and the places combined with item 30.

Mr. ANDERSON. What is the idea?

Dr. TAYLOR. That they are doing laborers' work. The former phraseology was "laborer or messenger." There was very serious misunderstanding, a complete misunderstanding, voiced in the House last year which it was difficult to make clear, although the facts were clearly presented. This segregates the messengers from the laborers and consolidates the laborers all into the one item, No. 30, at \$720 each per year.

Mr. ANDERSON. And you abandon your \$660 grades?

Dr. TAYLOR. Yes, sir: the remaining 35 laborer places are submitted in lieu of the lower grades. So that it will make the minimum compensation of laborers in the bureau \$720.

Mr. BYRNES. What work are these laborers engaged in doing?

Dr. TAYLOR. All kinds of hand labor. Some are here in Washington and some are at the field stations, both permanently and temporarily. Quite a good many of these places are vacant through the winter and are occupied through the crop season, during the time when the services are required, but it is general unskilled labor of widely varying kinds.

Mr. ANDERSON. How many of these places are vacant now?

Dr. TAYLOR. I could not say just how many. There are always some vacancies, but the number fluctuates up and down.

Mr. ANDERSON. If you raise the average salary and dispose of these lower places, which you have never been able to keep filled, could you not get along with a smaller number?

Dr. TAYLOR. We are proposing a smaller number.

Mr. ANDERSON. It cuts 11 out of this item for messengers and laborers.

Dr. TAYLOR. Yes, sir; I think that is the number. Of course, if the money appropriated here for salaries was handled as a lump proposition in which you could secure your labor at the price the individual was worth, I think a very considerable reduction in the number of employees could be accomplished, but under the statutory roll plan a vacancy involves reversion of the money to the Treasury during the vacant period. Item 41, page 71, 7 laboratory aids at \$960 each involves an increase of 5 laboratory aids at that salary. These 5 laboratory aids are in lieu of 7 laboratory aids at \$720 each (item 44), and will make the minimum salary for laboratory aids in the Bureau of Plant Industry \$840. On page 72, item No. 47, 7 gardeners at \$1,200 each, an increase of 3 at that salary. These 3 new places and 9 gardeners at \$900, in item 49, are submitted in lieu of 12 gardeners at \$780 each.

Mr. BYRNES. What is the necessity for increasing the number of your gardeners?

Dr. TAYLOR. The number is not increased; it remains unchanged.

Mr. BYRNES. What good do you accomplish by the experiments in the greenhouses there? What is the object of the work?

Dr. TAYLOR. The greenhouses are, to an extent, to the investigator of plant problems what the laboratory is to the chemist. They are the places where he determines his initial plant reactions, whether the work be plant breeding, plant pathology, plant physiology, or to an extent in fertilizer studies. The greenhouses afford the facilities for a wide range of experimental work on plant problems.

Mr. BYRNES. How are the results of the experiments that are conducted there communicated to the people?

Dr. TAYLOR. Very rarely is the work in the greenhouse final. The work in the greenhouses is the initial work, the small-scale activity which determines and shapes the field experimentation later. Not infrequently, too, the greenhouse makes possible the doing of two years' work in one, through carrying during the six months of the winter season a crop through a generation which would otherwise require the summer of next year. The greenhouses afford the facilities for plant experimentation under controlled conditions.

Mr. BYRNES. Where are these gardeners employed?

Dr. TAYLOR. Largely in the greenhouses here on the department grounds, and to some extent at Arlington Farm and at field stations.

Mr. BYRNES. Now, any experiment that is conducted by them in the greenhouses here, how is it communicated to the people, if at all?

Dr. TAYLOR. Through publications and demonstrations, just as in the case of work done in the open ground, although I wish to make this clear, that the greenhouse work in many cases is not final and is merely preliminary to larger scale work in the field.

Mr. BYRNES. I do not understand exactly, but I presume the object of conducting experiments is to benefit somebody.

Dr. TAYLOR. It is to ascertain the truth regarding plant problems of scientific and economic importance.

Mr. BYRNES. Now, it is no good to ascertain the truth if you are going to harbor that truth up in the greenhouses. It may be of service to you, but it will not be of service to anybody else.

Dr. TAYLOR. Much of the work on plant diseases, results of which the department has published during the past 20 years, has been begun in the greenhouses and has been carried from them out to the field.

Mr. ANDERSON. Do you maintain the so-called White House greenhouses?

Dr. TAYLOR. No; we have nothing to do with those. It should be made clear to the committee that the Department of Agriculture has no relation to the ornamental plantings of the parks and flower beds outside of the Department of Agriculture grounds. That is carried under the War Department.

Mr. HARRISON. You have the necessary part of the laboratory equipment?

Dr. TAYLOR. It is a plant laboratory.

Mr. ANDERSON. Now, for instance—maybe Mr. Byrnes has this in mind, too—we have a "mum" show here every year. Who conducts that show?

Dr. TAYLOR. That is conducted entirely by the Department of Agriculture.

Mr. ANDERSON. That is a Department of Agriculture show?

Dr. TAYLOR. Yes; and in that are illustrated some of the results attained in the breeding and cultivation of those plants. We expect probably next year—that is, 1922—to have a very interesting temporary exhibit of Easter lilies which will illustrate and demonstrate to the commercial florists the practicability of producing here in America our Easter lily bulbs instead of relying on Bermuda and Japan for them as we have had to do heretofore. That demonstration feature is an incident of the research work. In the greenhouses on the department grounds as they stand there is a potential value to American agriculture and horticulture that can hardly be measured in terms of money. It is the birthplace of much of the plant improvement and pest-control work of the department.

Mr. ANDERSON. I want the same statement on these gardeners that is asked for on the clerks.

Dr. TAYLOR. We will furnish the statement covering the whole staff pay roll. Item No. 58 is for one mechanic at \$1,200, which involves an increase of \$120, for a man who is employed in connection with the management of the greenhouses for mechanical work. In item No. 60 there is an increase of \$120 and it is for the same reason. Item No. 61, one carpenter at \$1,200 provides an increase of \$300, to bring that man up toward the commercial rate of the same type of service that he is rendering.

Mr. BYRNES. How long have you had him in the service?

Dr. TAYLOR. I could not say, Mr. Byrnes, in this particular case. My impression is that he has been with us for several years.

Mr. BYRNES. Is he a good, capable man?

Dr. TAYLOR. Yes, sir; he is thoroughly satisfactory.

Mr. HARRISON. Now, you refer to the commercial rate of carpenters, which is \$8 a day. Of course, that does not mean 300 days in a year.

Dr. TAYLOR. No, sir.

Mr. ANDERSON. I do not know how many days in the year the carpenters work, but I imagine it is not much over 200 days.

Dr. TAYLOR. Of course, that varies greatly according to the condition of the building industry and the condition of the weather, but this is the rate which the carpenter sees as the recognized union schedule for that sort of work.

Mr. BYRNES. Eight dollars a day?

Dr. TAYLOR. Yes, sir. It is \$1 an hour in the District. I believe it is above that now. I think it went to \$1.05 after these estimates were prepared. Now, item No. 64 is an omission of 21 messengers or laborers at \$540. That is covered by the note under item 30 to which I have referred. Item No. 65 is for 22 messengers or laborers at \$480 each, a decrease of 7. Seven of the laborer places are now occupied by charwomen and have been combined with item 70, where you will note that there is an increase of 7 at \$480.

Mr. ANDERSON. Does that mean an actual increase in your charwomen force?

Dr. TAYLOR. No, sir; it is merely the transfer of this number of messenger and laborer places to the charwomen item. The labor in those places is actually charwomen's labor.

Mr. ANDERSON. You have 29 messenger boys here. What do you use them for?

Dr. TAYLOR. For carrying the mail and papers and materials and whatever is needed to be transported from the several buildings, some eight of them in addition to the west wing, now housing the Bureau of Plant Industry. We have an exceedingly difficult situation with respect to the actual physical operation of our work, scattered, as we are, through the city.

Mr. ANDERSON. You ought to organize a parcel-post force and make deliveries.

Dr. TAYLOR. We have a pony messenger service, through which a regular schedule is maintained, and we have to do a good deal of special-messenger work in addition to that, and in addition to all the use that we can make of the telephone. It is a tremendously difficult situation because of the scattered location of the bureau's forces. I believe that covers the points of the statutory roll. The note at the bottom of page 71 and on page 73, which was printed "apparent increase, \$5,920," should be "apparent decrease, \$5,920," the actual decrease being \$5,920, as shown in the tabulation which follows. Is there any further question on the statutory roll, Mr. Chairman?

Mr. ANDERSON. No. Take up the items on page 74. The first item is No. 73.

FOR INVESTIGATION OF PLANT DISEASES AND PATHOLOGICAL COLLECTIONS—FOR INVESTIGATION OF SOFT ROT IN POTATOES, ETC.

Dr. TAYLOR. Item No. 72 is the general authority for the work of the Bureau of Plant Industry, in which there is no change. Item 73, the subappropriation for investigation of plant diseases and pathological collections, including the maintenance of a plant-disease survey, \$92,020, provides for an increase of \$30,000. This increase is needed for two distinct features, as shown in the note, first, an in-

crease of \$15,000 for the investigation of soft rots in potatoes and other vegetables, particularly the bacterial storage rots, which frequently cause very heavy losses to these crops. These, we should keep in mind, are the bacterial diseases of these products, as distinguished from the fungous diseases which are handled in other sub-appropriations.

Mr. ANDERSON. How much are you spending on this work now?

Dr. TAYLOR. The only work on these that is under way now or that is possible now is incidental to the other bacterial investigations. Dr. Erwin F. Smith, the head of the laboratory, has desired for the past two or three years to have sufficient funds to carry forward efficiently this work on bacterial rot of potatoes and related plants. He has not been able to make more than a beginning in it in connection with his other bacterial-disease work.

Mr. ANDERSON. Is there any unusual prevalence of this rot now?

Dr. TAYLOR. It flashes up destructively at times. I can not say that there is any unusual development just now. The present situation with potatoes is that of rather more potatoes than there are buyers for potatoes. That, however, follows, as we will remember, an extreme shortage, probably the most acute shortage, as indicated by the prices, in American history during the past 12 months. In the investigation and overcoming of plant diseases, progress comes only through steady, persistent, patient, and thorough work, begun in time to have results available when the crucial need comes.

Mr. ANDERSON. I think the committee feels—I know I do—that we can not undertake any new work this year that does not bear some relation to conditions existing now that have not existed heretofore, and unless it is possible in some way to slow up other investigational projects or close them up altogether, I do not see how it is going to be possible to do a lot of the things you propose to do. I am telling you that at the start so that you will know what we are up against at the start of this proposition.

Dr. TAYLOR. I think I fully appreciate the difficulty of the situation.

Mr. ANDERSON. I want to say in addition that I have had an impression, whether rightfully or wrongfully, that the work done in the Bureau of Plant Industry has been done economically and frequently upon surprisingly small amounts of money, but we are just simply up against it.

Dr. TAYLOR. The point of view which we feel is fundamental with respect not only to plant diseases but also with respect to research generally is that the removal of these handicaps and overloads which agriculture is carrying in the form of crop pests must come through systematically conducted and fully prosecuted research, which must be a gradual operation. Such work can not be done over night. The remedies can not be found immediately when a tremendous loss from plant-disease epidemics is on us. We need to do it through steady, progressive methods under the direction of competent specialists steadily employed and with facilities which will permit them to make progress.

We need facilities and equipment for this work. We need additional personnel to carry it through and we feel that it would be wasteful not to utilize the forces we have well toward their productive capacity.

It is, of course, a question always of judgment of how far the country should go both in creating and in conserving agricultural production; but I feel that this would be a productive investment of public funds for the general good, both for the producer and the consumer. The losses from potato diseases in the United States during the last 50 years has been approximately one-fifth of the whole crop annually and not infrequently one-third to one-half the crop, and we believe much of this waste can be prevented by research.

ENLARGING PLANT-DISEASE SURVEY.

Mr. ANDERSON. All right, we will take up the next item.

Dr. TAYLOR. The second \$15,000 in this paragraph is for enlarging the plant-disease survey work.

This is a type of service needed both by the department and by the State experiment station extension forces to quickly bring together and make available to them, while it is current and applicable, information regarding the existence, location, and extent of plant disease attacks.

Mr. ANDERSON. What will be your expenditure under this plan?

Dr. TAYLOR. Our expenditure is practically \$10,000; we are asking that it be increased \$15,000. The department was strongly urged to enlarge this work; it was strongly urged by some of the States to make this \$200,000 because of its importance in developing control of destructive plant diseases.

Mr. ANDERSON. Well, you can just tell them if they criticize you on that proposition again that Congress would not give you the money.

Dr. TAYLOR. Our desire in the matter is to accomplish ultimately the end that we all agree is important to accomplish, namely, to have quickly available for the guidance of the pathological investigators of the department and the extension forces of the States timely information as to the occurrence, location, and extent of plant diseases.

It may be interesting in this connection to say here that a summary of the losses from plant disease on some 9 or 10 of our important crops last year, that is, the year 1919, showed that in 9 or 10 crops estimated losses were in the neighborhood of 650,000,000 bushels, just of those crops, such as wheat, corn, oats, potatoes, sweet potatoes, apples, peaches, etc.

Mr. ANDERSON. Well, if we made all of the losses that are figured that we make through bugs and diseases of one sort or another we would be starving to death every year. I do not think you can quite figure all those losses on that basis. We have, for example, on this tick eradication business, we have eliminated a lot of ticks and discovered a lot of new parasites.

Now, nobody can figure what those losses were, owing to those ticks, and it is the same way with these plant diseases. When you accumulate one, you get rid of another one; also, when you figure up the whole loss on diseases your estimate is likely to be a little high.

Dr. TAYLOR. This estimate is studiously low, Mr. Chairman, and it does not mean that we lost a given number of dollars. We recognize that the question of the financial unit value of a crop is depend-

upon many other things besides the value of the crop, but this is e, and we must recognize it in our consideration of the future of iculture, that no intelligent determination of agricultural produc- n can possible be made until there is a measurable degree of con- l of the crop pests. They lower our production from a given eage and so we find ourselves—the farmer finds himself—in a te of alternation of what we call overproduction and underpro- ction of crops. This is of advantage to no one except the specu- ive middleman and is as disadvantageous to the farmer as to the umer.

What we are working for is such a degree of control over these sts as will make possible a ration al determination by the farmer the production that is necessary to meet the probable demand. e work has to be done problem by problem, carried along some- es for years without spectacular successful results, but ultimately lucing the hazard of producing through control of the pest.

INVESTIGATION OF DISEASES OF ORCHARD AND OTHER FRUITS.

On page 75, item 74, there appears the item for the investigation disease of orchard and other fruits \$101,135. This provides an crease of \$20,200 which is needed for three items.

ENLARGING ORCHARD SPRAYING EXPERIMENTS.

The first one is \$10,700 for enlarging orchard spraying experi- ents.

Mr. ANDERSON. How much are you expending on that now?

Dr. TAYLOR. We are spending \$5,800 on that this year. The proj- has largely been devoted to liquid-spraying research. A begin- g has been made in the very important field of disease control ough the use of fungicidal dusts. It is desired to enlarge this rk materially now while the big question whether dust control ue to displace liquid spraying is being determined.

Mr. ANDERSON. How long is that likely to take?

Dr. TAYLOR. I can not say offhand, Mr. Chairman. The neces- for dust work will continue undoubtedly for two or three years ough the varying seasonal weather conditions. You may have in year a dry season when your fungus disease will hardly appear ll; when you will have too many peaches for the buying demand, lowed by a season when the grower has to fight the diseases for ry bushel of peaches he gets.

Mr. ANDERSON. Is there any successful dust-spraying machine on market?

Dr. TAYLOR. There are machines which apparently do very thor- gh distributing work. The question is not that of the machine rely, but it is largely a question of the efficacy of the dusts as stroyers of the fungi without burning or injuring the foliage or fruit.

The problem is similar in kind to that of the early days of liquid aying, when the question was, What will prevent the fungus from icking the apple without burning the apple so that its commercial ue is injured or without defoliating the trees. It is not unlikely

that we may come out of it with some combination schedule of applications of liquid and dust as the most effective method of controlling many of these diseases.

Fruit growers are putting large sums of money into equipment, materials, and labor, and manufacturers are putting large amounts of money into the production of equipment, and the quicker we get to know the facts the better will it be for both the fruit growing and the manufacturing industries.

FOR EXTENDING INVESTIGATIONS OF PHYSIOLOGICAL FRUIT DISEASES.

The second item in this increase is \$2,500 for extending the investigation of physiological fruit diseases. There are a number of diseases for which no causal organism is known or suspected.

Those that we are working on are chiefly on the Pacific coast, where serious losses from these diseases have been encountered. On this we are expending this year \$6,500.

MARKET INSPECTION OF FRUIT.

The third item is for \$7,000 for reinstating the pathological market inspection of fruit in cooperation with the Bureau of Markets and Crop Estimates.

This work is, you may say, the technical determination of the identity of the diseases causing the decay of fruits as they arrive at the great terminal markets. Such diseases often determine the possibility of successful transportation and distribution under particular conditions. In other cases the deterioration is merely incidental to faulty handling or to unsuitable climatic conditions while the fruit was on the trees. It is a highly important line of work which we carried on for, I think, about two years under the stimulating agriculture appropriation, where its usefulness was demonstrated. The fruit trade indorses it and urged us to continue it, and the Bureau of Markets relies on it for stabilizing their inspection work.

MR. ANDERSON. You are not doing work on this now?

DR. TAYLOR. Only incidentally. We are getting heavy correspondence relating to it from the trade. Samples are sent in to the department for identification, but we have got to be able to have men in at least two or three of the great receiving markets and available for visiting others to keep this work efficient.

INVESTIGATION OF DISEASES OF CITRUS TREES.

On page 77, item 75, we have the appropriation for conducting such investigations of the nature and means of communication of the disease of citrus trees, known as citrus canker, and for applying such methods of eradication or control of the disease as in the judgment of the Secretary of Agriculture may be necessary, for which we are asking \$109,720.

This amount was estimated, of course, some three months ago. It was believed at the time that the amount would be necessary to protect the citrus orchards during the next fiscal year.

The progress of the eradication work has been so satisfactory during these three months, however, that I think Dr. Kellerman, who administers this appropriation is willing to say that we could reduce this estimate considerably without risk to the work or to the citrus industry. And, if the committee is interested in following out this line of suggestion, I would like to have Dr. Kellerman just present it to you.

Mr. ANDERSON. I should think we would like to know what the situation of this work is now. It is relatively new and I was in hearty sympathy with it at the time, and I would personally like to know more about it.

GENERAL STATEMENT.

Dr. KELLERMAN. Mr. Chairman, this subject I think can be very briefly presented. As you will probably remember, the citrus industry was threatened or it was believed that it was threatened, by a disease that would destroy the commercial value of citrus plantings in the southeastern United States.

The disease of citrus canker is one which can be spread by contact or even by wind-blown rain, so that tropical storms, animals, vehicles, human beings, and even birds can spread the disease.

It looked like an almost hopeless disease to fight, because of the fact it can be spread during almost any season of the year.

The disease was widespread throughout the Gulf States, more widespread than anyone supposed from our first investigation. We might have been afraid to undertake the work if we had known how badly the entire South was affected before we even knew a new disease had gotten into the country.

The organization of this work was begun on insufficient funds because of our lack of knowledge of its wide distribution and rapid increase. During the past several years experiments have been adequate and the disease has been brought under control with really surprising rapidity. In Florida they had nearly 500 orchards badly infected and millions of trees threatened with infection within brief periods if weather conditions had been right. We have had only one outbreak of canker there in the past two years. That outbreak was particularly unfortunate, because it was a case that was overlooked, due to the fact that we have been reducing our force during the past two years, reducing them to the smallest limit that we thought would give efficient inspection. A plan of inspection was devised which provided for only occasional inspections in regions that were not under suspicion. One isolated region in Florida, near West Palm Beach, was overlooked, a region almost completely surrounded by swamp land. Considerably less than a thousand trees altogether occurred in that district. A case of canker there was not found until about two years after it first appeared, as near as we can tell from our history of the disease, since that time, so a few months ago nearly 600 trees had to be destroyed in that section.

That is the only section where that disease has been found in Florida for over a year and half. The previous finding of the disease was one case in a property near Tampa.

The history of the other States is almost as completely satisfactory. One case of citrus canker has been found in Alabama in the past 12 months. No cases have been found in Mississippi. A few in sections are still being found in Louisiana, but all of the commercial districts, which means the district south of New Orleans, has been free of canker for almost the full two years.

People are going into the citrus business again in these regions where citrus growing was temporarily abandoned during the hysteria of the citrus canker panic. Land values have returned. The citrus business in the South is again considered to be a perfectly safe investment and on a sound basis. It is an industry valued at about \$500,000,000 in Florida and considerable in other States.

The situation in Texas is the only serious proposition at the present time. The Supreme Court of Texas has decided that the State has not the authority to condemn as a nuisance trees affected with citrus canker. That has prevented the completion of a campaign almost in the last stages of satisfactory development. There was very little canker left in Texas at the time of this decision, and the only important citrus district of Texas, that of the extreme southern part of Texas, the region where citrus is being developed, at least experimentally, was entirely free from the canker. Since this temporary setback in the work there has been found cases of citrus canker in the Rio Grande section.

Mr. ANDERSON. Widespread or localized?

Dr. KELLERMAN. They are localized and, as I have said, it is not possible to say whether it will be possible to control them. I doubt it being possible in any State to develop adequate quarantine restrictions when near-by areas are harboring citrus canker.

The situation in the other States is more favorable. A wide area separates the scattered orchards. There are only a few scattered groves. A wide area separates those districts from Louisiana, Alabama, and the Florida citrus regions that are practically free of canker. We believe that the complete eradication of the disease is in sight.

If it were not for the chance of overlooking such plantations as the one in Florida, and losing not only much property, but much time in the final clean-up of the disease, we could very quickly reduce our force and reduce the work in at least three of these States.

The chances of properties getting infected before the discovery by our inspectors of isolated holdover infections seem to make an efficient inspection necessary for at least one more year, although it will not be necessarily as extensive as has been carried on.

I think we can maintain a sufficient force with a cut of \$30,000. I do not think it would be really safe to cut more than that because of the necessity of putting on more men promptly to clean out any such infections as we found at Palm Beach. But for the chances of finding these infections, we could cut our work to only the necessary men for continuing inspection of the regions more recently found infected.

Our recommendation from these figures, therefore, is that we have a reduction of \$30,000 in this item.

Mr. ANDERSON. Let me ask you if the States are still cooperating with you in this eradication work?

Dr. KELLERMAN. The States are cooperating very enthusiastically. The State officers even in Texas are cooperating.

Mr. ANDERSON. Are they furnishing men and money?

Dr. KELLERMAN. They are furnishing men and money, although the bulk, I should say, of the work is really being borne by the Federal department. That is particularly the case in Alabama, for instance, where the citrus industry is not particularly important. The necessity of completing that work is of even more importance to Florida than it is to Alabama, so we are forced to put in more money there than the State is putting in.

Florida has put in approximately the same funds that we have from the start. Mississippi at first did not put in any, but the time arrived when they realized the fine work that was going on successfully, and that the citrus industry was after all going to be an industry that could be developed in some parts of the State. Mississippi appropriated much more money than the department is putting into the State. Louisiana has also been expending 30 per cent more money than the department for two years, but at the present time they are putting in much less.

Mr. ANDERSON. I wish you would put into the record a statement showing the respective contributions of the different States and the Federal Government here.

Dr. KELLERMAN. I have it here, and I can read it to you if you wish to hear it.

Mr. ANDERSON. Just put it in the record, unless you want to read it.

	Number of properties ever showing canker, Dec. 31, 1919.	Number of properties showing canker from Dec. 31, 1919, to June 30, 1920.
Alabama.....	400	.....
Florida.....	481	1
Louisiana.....	390	3
Mississippi.....	121	.....
Texas.....	3,367	2

	Number of trees de- stroyed.	Value of trees de- stroyed.
Alabama:		
Nursery.....	5,303,849	\$2,651,924.85
Grove.....	213,375	2,122,759.80
	5,517,224	
Florida:		
Nursery.....	92,233	46,116.95
Grove.....	22,016	220,102.00
	112,249	
Louisiana:		
Nursery.....	42,057	21,028.85
Grove.....	17,847	178,470.00
	59,904	
Mississippi:		
Nursery.....	58,862	29,431.00
Grove.....	7,375	73,750.00
	66,237	
Texas:		
Nursery.....	1,222,325	611,162.50
Grove.....	509,797	5,097,970.00
	1,732,122	
Total:		
Nursery.....	6,719,326	3,359,680.20
Grove.....	770,410	7,704,100.00
	7,489,736	11,063,780.20

Citrus canker expenditures.

	State expendi- tures.	Miscella- neous con- tributions.	Federal expendi- tures.
Alabama.....	\$6,607.86	\$3,987.50	\$101,990.00
Florida.....	509,266.87	121,501.50	861,400.00
Georgia.....	12,000.00		24,000.00
Louisiana.....	50,665.06		71,552.00
Mississippi.....	56,000.00		59,242.00
Texas.....	96,786.71		151,000.00
Total.....	731,326.50	125,489.00	1,273,172.00

Value of trees destroyed.....	\$11,063,780.20
State expenditures.....	731,326.50
Miscellaneous contributions.....	125,489.00
Federal expenditures.....	1,273,172.11
Total cost of eradication work.....	13,193,755.27

Dr. KELLERMAN. I would like to give you just the totals. The Government altogether has put in \$1,273,000 and some odd, and the States from State funds have put in \$731,000 and some odd, and the miscellaneous contributions from individual planters, from citrus growers' organizations, etc., have put in a little over \$125,000.

I would like to give you some idea of the way this work has gone on: In Alabama something like 5,000,000 trees were destroyed—those are largely nursery trees—in Florida 114,000, and that is largely nursery trees, and 22,000 grove trees were destroyed as against nearly 10 times as many in Alabama.

That seems great when you think of the cost, which is so much higher in Florida. That is due to two things; one is the cost per acre in Florida was much higher, because many old and very valuable trees became infected, became infected in the heart of the citrus region, trees worth anywhere from \$200 to \$300 apiece, but if they had not been destroyed the entire citrus district in which those trees occurred would have been ruined commercially.

Mr. ANDERSON. Well, where these trees were in the middle of a grove, I suppose you had to destroy a large number of trees, infected, as well as those trees that were not infected; did you?

Dr. KELLERMAN. Many trees have been destroyed in that way, only by agreement with the owners, however. Thus, owners have occasionally made voluntary agreements to have trees destroyed to avoid the cost of reinspections. As a general rule, the only trees that were actually supposed to be infected have been destroyed. We have not allowed the policy of destroying an entire grove even where trees were found infected in the center. Trees have been destroyed, and adjacent trees have been sprayed with disinfectant and kept under observation. In many cases the disease has not spread to more than two or three additional trees.

Where we have found groves showing widespread infections, with infected trees scattered all over the grove, the entire grove has been taken out, but that has not been done in the older plantings. That is one of the reasons the number of trees in Florida is surprisingly low as compared with other States where the plantings are mostly young and in many cases becoming infected while in nurseries, and nursery stock. When nursery stock becomes infected we know that the entire planting is doomed within a short period of time. The total number of nursery trees is about seven and a half million and grove trees about three-quarters of a million.

Mr. ANDERSON. What is the commercial loss that it represents?

Dr. KELLERMAN. That is hard to estimate, of course, because the nursery tree is merely worth what the market price will bring. We have estimated that 50 cents is probably the average market price for citrus nursery stock, so that our nursery trees would have cost us about three and a half million dollars—I mean would have meant that much loss to the nursery trade.

The grove trees we think have cost the growers about \$8,000,000. That, I think, is the cost estimate, and no account is taken of losses in property values, in loans canceled, and all other indirect ways that people lost money during the canker outbreak.

Altogether the loss has been between ten and twenty millions, I think—between those figures; the loss that occurred in the South—and we have spent, as I say, on the part of the Federal department less than a million and a half. I think that we have through this work up to the present time really established the soundness and safety of an industry worth altogether perhaps close to \$600,000,000 in the South.

Mr. HARRISON. Mr. Chairman, I want to call your attention to the fact that here is an item that amounted to \$430,000 in 1918 and an estimate has been submitted for \$109,720 for the coming fiscal year, and there is a suggestion of a \$30,000 reduction. I desire to call the attention of the committee to the fact that here is an item where reduction has been made.

Mr. ANDERSON. I wish to state, Mr. Harrison, that that fact has not escaped the eagle eye of the chairman of this committee.

Mr. BALL. The best part of it is that a most dangerous disease has been almost entirely eliminated. I think that is a hopeful thing.

Dr. TAYLOR. There was well-founded apprehension on the part of the industry. They well knew that unless the pest were grappled with adequately and promptly their orchards were gone as a commercial proposition in the southeastern United States.

California, fortunately, has escaped infection, so that there was no necessity and we have not had to fight there. We have not had to do more than incidental scouting work to make sure that their groves were clean.

INVESTIGATION OF DISEASES OF FOREST AND ORNAMENTAL TREES AND SHRUBS.

The next item is 76, on page 78, the subappropriation for the investigation of diseases of forest and ornamental trees and shrubs, including a study of the nature and habits of parasitic fungi causing the chestnut-tree bark disease, the white pine blister rust, and other epidemic tree diseases for the purpose of discovering new methods of control and applying methods of eradication or control already discovered, for which we are asking \$81,115, for the purpose of continuing our research activities with regard to these tree diseases. No increase is involved.

Mr. ANDERSON. Has there been any development of the white pine blister rust? There was quite a scare about that I remember.

Dr. TAYLOR. There has been a continuous spread in certain sections, particularly including Wisconsin and Minnesota, which is rendering control an exceedingly difficult problem.

This is a research appropriation and I would say for the information of the committee that the investigation of diseases of forest trees are handled by the Bureau of Plant Industry rather than the Forest Service. They have charge of administering this particular work.

FOR ERADICATION OR CONTROL OF WHITE PINE BLISTER.

Item 77 on page 79 is the subappropriation for the eradication or control of white pine blister rust. This is the subappropriation under which we are endeavoring to develop practical control of this disease to a degree sufficient to permit the maintenance of white pine production in the United States.

The disease is of European origin. It came to this country in all probability on white pine nursery stock imported prior to the passage of the plant-quarantine act. It was distributed through the northern white pine territory on nursery stock to a degree which was not determined when we began this control work. It is a disease which sometimes may incubate in a tree for at least two years before it becomes detectable to the eye, and the only possibility of control is in the line that we are following; that is, through the eradication of the currants and gooseberries, the plants of the genus *Ribes*, which constitute the intermediate hosts through which the disease spreads from pine tree to pine tree. It can not spread direct from pine to pine.

Mr. ANDERSON. Are these investigations in the virgin forests?

Dr. TAYLOR. To some extent; yes. In the upper lake region, almost entirely so. The pine industry there is a virgin-forest industry. It is still in the stage of harvesting the crop that nature grew. The industry of a portion of New York State, and of most of the New England States, is on a very different basis. The white pine is planted and cultivated and cared for as a crop, and there is every reason to expect that it will be a permanent crop if this disease can be practically controlled.

Mr. ANDERSON. Where you have the disease established, in the white pine, just how do you go about stamping it out?

Dr. TAYLOR. We never have successfully stamped it out, so far as I know, under original forest conditions, and the only way through which it can be controlled is through the entire elimination of these currants and gooseberries which enable the disease to pass from currant to pine. Until the diseased pines are harvested, and what you are left with is clean, it depends altogether on the degree of—

Mr. ANDERSON. Have you any cooperation from the States or the lumber companies in this?

Dr. TAYLOR. We are having very extensive cooperation with some of the States involving—I have not the figures here of this financial contribution by the States, but my recollection is that it amounted in the neighborhood of \$135,000, some State appropriations, some township appropriations, and in some cases interested forest owners; that is, white-pine owners. In general, the work from Ohio eastward is on the basis of at least some financial aid by the States. From there west we are carrying the heavier portion, and in the Rocky Mountains five-leaved territory, the States of the Rocky Mountains and the Pacific Northwest where there is not known to be any infection, and where we are maintaining this service, we carry substantially the entire expense because of the Government ownership of so large a portion of the white pine in the forest reserves.

Mr. ANDERSON. Well, you have no hope of eradicating this dis-

TAYLOR. Not from the American Continent.

Mr. ANDERSON. Now, to what extent do you think you are going to be able to control it, if at all, and retard its spread?

TAYLOR. Much will depend upon the economic conditions and psychology of the territory to be considered. In the New England States there is every reason to expect that a system of control can be worked out which will make it possible ultimately for the growers or the local government to keep down the currants and gooseberries so that the growing crop can be saved.

BYRNES. I take it that the eradication will depend to a certain extent upon the effort that is made to remove the diseased

TAYLOR. The question of the prevention of the spread depends entirely upon the removal of the gooseberries and currants, which are the medium through which the disease is spread.

It is not a simple matter, as anyone can realize who has been in the Rocky Mountain country, such as in many places white pine is introduced. We are satisfied of the practicability of developing an

economically sound control in the territory where there is sufficient interest in the future of the pine industry to encourage local cooperation and local contribution, and ultimate local assumption of the ribes eradication work. We do not yet have figures as to the distance of the spread: that is, the spread from ribes to ribes. We do not know the last word regarding the distance outside of the pine plantations where the ribes must be eradicated to leave the pines safe. We do feel that practical results are being secured. We shall have to readjust our work in some sections. We propose a continuance of the appropriation of this year.

Mr. ANDERSON. Are you through with this item?

Dr. TAYLOR. I am through with that item, Mr. Chairman.

Mr. ANDERSON. Did you state for the record in what States these investigations are carried on?

Dr. TAYLOR. I did not. I will be glad to furnish you a statement, if you desire it, a comparative statement that would show not only the States in which we are working but the financial contributions of those States.

Estimated expenditure by States and Federal department under subappropriation for blatter-rust control during the fiscal year 1921.

State.	By State.	By Federal Government.	State.	By State.	By Federal Government.
Maine.....		\$5,644	Missouri.....		\$1,000
New Hampshire.....		30,918	Montana.....		1,000
Vermont.....		8,858	Nebraska.....		27
Massachusetts.....		10,013	Nevada.....		1,000
Rhode Island.....		4,879	New Jersey.....		200
Connecticut.....	200	5,154	New Mexico.....		200
New York.....		33,153	North Carolina.....		(3)
Pennsylvania.....		2,126	North Dakota.....		(2)
Wisconsin.....	200	17,333	Ohio.....		200
Minnesota.....	943	10,043	Oklahoma.....		20
			Oregon.....		2,500
Total dollar-for-dollar expenditure...	137,773	137,773	South Carolina.....		(2)
Arizona.....		2,389	South Dakota.....		(2)
Arkansas.....		21	Tennessee.....		94
California.....		13,186	Texas.....		132
Colorado.....		1,463	Utah.....		1,500
Delaware.....		93	Virginia.....		163
Georgia.....		(2)	Washington.....		5,500
Idaho.....		3,158	West Virginia.....		1,000
Illinois.....		1,131	Wyoming.....		500
Iowa.....		1,254	Expenditure in States having no specific appropriation...		45,117
Indiana.....		203	General administration expenses		39,450
Kansas.....		1,032	Amount unallotted		700
Kentucky.....		32			
Maryland.....		500			
Michigan.....		2,106	Total	\$137,773	213,165

¹ Menominee Indian Reservation included with Wisconsin.

² Expenditures have been made in these States in previous years; no expenditures have been made in Florida and Mississippi.

Mr. ANDERSON. Where these infections occur, you go ahead, you take control of the situation; do you do the actual physical work connected with the eradication of the gooseberries and currants?

Dr. TAYLOR. Not except in small demonstration areas where it is necessary to demonstrate the method of ribes eradication. We, of course, have no authority to go into a man's place and cut out his currant bushes or his gooseberries. In all cases that is done by the

State authorities and in certain of the States, as I think in New York, the State has gone so far as to authorize the creation of ribes free districts and pine free districts, their location being determined by the relative importance of the small fruit industry and the pine-timber industry.

Mr. ANDERSON. You have not been able to determine how close together a pine tree has to be to a gooseberry bush, in order to permit the spread of the disease?

Dr. TAYLOR. Not with exactness, though in several cases I think with sufficient exactness under the conditions of prevailing wind at the time of the spread of the disease. A half-mile distance from the outermost edge of the pine planting is sufficient if kept free from currants and gooseberries to prevent infection of the pine from currants and gooseberries.

WEDNESDAY, DECEMBER 22, 1920.

SOIL-BACTERIOLOGY AND PLANT-NUTRITION INVESTIGATIONS—INVESTIGATING SOIL FERTILITY THROUGH ARTIFICIAL CONTROL OF BACTERIA.

Mr. HARRISON. As Dr. Kellerman will be compelled to be out of the city next, I would like, with your permission, to have him discuss three or four items out of their regular order. The first one is No. 80, on page 83, for soil bacteriology and plant-nutrition investigations.

Dr. KELLERMAN. This item, Mr. Chairman, is one under which very technical experiments have been conducted for a good many years, and these experiments are yielding practical results to the farmers of the country. The most well known, or widely recognized, is probably the development of the use of pure cultures for inoculating legume crops. This was worked out in this laboratory nearly 20 years ago, perhaps. It was first started in Europe, but not successfully developed there. It was established satisfactorily through the research made in this country.

Since that time the use of pure cultures for improving the growth of legume crops has extended very considerably, with a considerable improvement in farm practice. It has resulted in a wider and better use of legumes in much of the rotation practice. Improvements in those methods, of course, are going forward. The most important feature of our work at the present time is covered by the estimates we are making to develop a bacteriological understanding of soil conditions that will enable a more intelligent control of soil fertility possible. From our very small experiments in greenhouses and on small plats at Arlington Farm, it appears that we have struck promising leads. The greenhouse experiments and the small plats operated in accordance with our bacteriological control are yielding considerably more and without an increase in labor, so that if these methods are going to be applicable to large areas, it should materially change and improve some of the agronomic practices. We are very anxious to extend that type of experimentation, but with the increasing cost of laboratory operations in the past several years, and with the stationary appropriation or allotment for this purpose, the work has been a great deal reduced, it being a type of work that

we did not feel that we could logically urge any extension of during the war. At this time it does seem that we have reached the point where the work is likely to go to pieces unless we can make some increase in the funds for continuing and developing the experiments.

A good many technical studies of considerable value have resulted from it, but their direct application to farm practice is rather hard to outline briefly, and, unless you care to have them discussed, I will not refer to them. That explains the first increase requested of \$10,000 for the laboratory and field work in soil bacteriology, including some increase in technical experiments in the inoculation of legumes, and a slight increase in the distribution of cultures that we make for experimental purposes.

FOR ENLARGING EXPERIMENTAL WORK.

The increase of \$25,000 in this item is for enlarging the experimental work and the technical investigation of the relation of the length of day to the flowering and fruiting period of crop plants. A recent discovery in this work is perhaps one of the most remarkable achievements in a scientific way that has been made during this generation, or, I mean, in agricultural science. That is the discovery of the new principle that the length of the daylight period is one of the most, if not the most, important factor in controlling the type of growth of the different plants, and that plants respond differently to different numbers of hours of daylight with a sharpness of reaction that is almost incredible. This may not appear to be a point of immediate practical importance.

I think, however, that there is an example, even at this early stage of the experimental work, that shows the practical importance of it. I have some photographs here of a type of tobacco particularly important for this section of the country, the Maryland Mammoth tobacco. That is a very desirable type of tobacco. For many years it has been difficult to handle that crop because of its failure to produce seed. The plant will grow luxuriantly and produce big leaves in Maryland, but is killed before it reaches maturity. Through the use of the greenhouse a small seed supply was maintained, but with great difficulty. This new principle, I may say, was really discovered through an attempt to develop methods to produce seed supplies of the Maryland Mammoth tobacco. Through an understanding of the reaction to the length of the day of this crop it has become possible to plant that crop in Florida at the proper season as a winter crop, when the day is short enough so that the plant will be forced to mature.

Mr. BYRNES. When the day is short enough?

Dr. KELLERMAN. Yes. The day in our summer time up here is so long that it grows big leaves instead of producing seed, and consequently it keeps right on until the day starts to shorten rapidly in the fall, but by that time the day shortens too rapidly and frost comes too soon for the plant to make the change. By growing it as a winter crop in Florida, it will mature as a normal tobacco plant, and a seed supply of this variety can easily be maintained in that way. That is one example. Another example is the control of

production. It is possible to make flowers bloom at any season of the year that we want them to bloom merely by adjusting the number of hours of daylight that they get. From the standpoint of a commercial florist that is actually feasible; he can force his plants to bloom at the time he wants them to bloom.

BYRNES. How are you going to adjust the number of hours of daylight?

WELLERMAN. In summer, by merely covering up the plant at night and not uncovering it in the morning until the proper time has elapsed for the right hours of daylight, if you want to shorten the day; if you want to increase the daylight, then you put in electric lights.

Here is a photograph of an example of the cosmos showing that a normal plant will go ahead and bloom, a comparatively small plant but by preventing the plant from blooming, keeping it at the same temperature, in the same kind of soil, in the same bed, and in the same greenhouse, to prevent it from blooming by using a different number of hours of light, those giants have been produced from the same kind of seed.

ANDERSON. I know that this proposition, or a similar proposition at least, has been undertaken with respect to the production of eggs, and the production of eggs has been very materially increased by lengthening the day. I know that is entirely feasible, we have seen it worked out, so that I do not see any reason why it is not just as feasible with plants. Of course, you have a great many more factors in your equation, but the general principle, of course, is identical.

WELLERMAN. It is identical except, if I may be so bold as to compare the animal men, I think they fail to catch the principle, but when they get the idea. It is easy enough, from an understanding of this principle in plants, to go too far on that question of giving plants extra light and make them stop laying. It is necessary to understand that this principle changes a delicate balance, and a minute more or less, when you get to the proper period, is sufficient to make a plant flower or not flower, or, I think, to make a hen lay or not lay. That is really the important thing, and it is more important that different varieties of plants have different periods of daylight. That explains why some of them are adapted for flowering in the North and others for flowering in the South and that is why some varieties go completely to pieces in the South and do not bear at all when they are changed from one latitude to another. This photograph shows something of the effects of light on the others relating to questions of flowering. This photograph shows a yield of potatoes, depending on the relative length of day and night, but not the temperature. We believe that an understanding of these principles and making a more thorough investigation of the relationship of the critical period of daylight and darkness for the different species will clear up many of our very troublesome economic problems in handling crops, and from the standpoint of plant breeding it should give us a totally new and better way of what we are trying to breed for. Furthermore, it gives us a new technique in cross-breeding. We can now force things to bloom at the same time that normally did not do so, and instead of waiting for pollen, which is troublesome and very often unsatisfactory, we probably can force things that we want to hybridize to

come simultaneously into bloom. The discovery of a new biological principle such as this is very rare and it is seldom that such a discovery is recognized as of any practical importance when it is discovered. This seems to be unusual in those several particulars. It does seem to be a discovery of remarkable significance; it does seem to show opportunities for practical or nearly practical results in the near future; and it does open avenues for experimentation that we believe to be of extreme urgency. It seems to me it would be a great mistake to delay following out such a promising lead as this. We are urging what I think is a very small sum, considering the importance of this work; we are urging an increase of \$25,000.

TRAVELING EXPENSES—EQUIPMENT AND MATERIAL.

Mr. ANDERSON. I would like to ask you a question or two on the financial end of this proposition. According to your tabulated statement of expenditures on this item there is an increase of approximately \$4,000 in your salary item and an increase of \$11,000 in your travel-expense item, an increase of about 300 per cent; then, again you have an increase of \$12,000 in your item for equipment and material. I am not sufficiently advised as to the method of proceeding under this item to know whether it is disproportionate or not, but on the face of it it looks so.

Dr. KELLERMAN. Which item would you count as disproportionate—the travel-expense item?

Mr. ANDERSON. I think the travel-expense item is disproportionate and possibly the other two. I do not know what you have in mind in the way of equipment and material.

Dr. KELLERMAN. I should point out that in carrying out experiments in the near future one of the things that is necessary is to start experimental work at points of widely different latitude. We are very anxious to undertake experiments as far apart as southern Texas and Maine or Washington State, as well as at some intermediate points, in order to get the advantage of the wide difference in latitude. Equipment will be required in the way of practical incubator arrangements in order to maintain temperature and moisture conditions as nearly constant as possible at each point.

Mr. ANDERSON. Is this equipment to be put up in connection with stations already established or will you have to establish new stations in new locations for this work?

Dr. KELLERMAN. In southern Texas we would probably have to establish a new station—that is, it would not be a station in the sense of putting up the buildings that would ordinarily go with a station, but we would not have the advantages of station equipment there, as no station buildings are maintained in southern Texas by either the State or this department.

Mr. ANDERSON. Then, why do you pick out Texas?

Dr. KELLERMAN. We can go farther South there than anywhere else in the country; that is the only point. We do not need to use Texas, but that is a desirable place because of its extreme southern location. We could use Miami, Fla., where we already have buildings that we could use, but the difference in cost would not be very material. We would not be putting in any elaborate equipment at any

point, but it is more a question of needing quite a little additional equipment in this experimental work, and not particularly expensive equipment.

Mr. ANDERSON. I take it that these experiments are carried out on a relatively small scale. You do not carry them out on a large greenhouse scale?

Dr. KELLERMAN. No.

Mr. ANDERSON. They are carried out on a small scale, which involves some equipment, but relatively inexpensive, and small in extent.

Dr. KELLERMAN. Yes.

Mr. BYRNES. But it does involve the construction of buildings in which to house the men who are sent to conduct these experiments, does it not?

Dr. KELLERMAN. No; the men would all have to take care of their own housing. This would be purely a temporary type of location, and, therefore, we would not attempt to develop any continuing equipment; it would be equipment of a temporary character.

Mr. BYRNES. I do not see why it should be anything but of a temporary character, because of the very nature of the experiments.

Dr. TAYLOR. It would mean temporary field laboratories operated simultaneously at various points where the latitude conditions fit.

Mr. ANDERSON. Have you finished with that item, Dr. Kellerman?

Dr. KELLERMAN. I have finished, Mr. Chairman, unless you desire some more discussion of the question of having adequate shipment.

Mr. ANDERSON. I would like for you to make any explanation you care to make in regard to the travel expense item.

Dr. KELLERMAN. I think that is very well explained by two things. During the past four years we have cut down our travel below a safe limit for adequately handling our field work, because of the necessity of curtailing expenditures on account of the high cost of railroad travel. Railroad travel is now more expensive, and in carrying on our work, and, especially, in carrying on this work where we are investigating the length of day problem, much more travel is necessary if we are to carry on the work to the best advantage in the utilization of the time of our technical men.

FOR INVESTIGATIONS OF COTTON, CORN, AND OTHER CROPS INTRODUCED FROM TROPICAL REGIONS.

With your permission, I will skip the item on page 84, or item 81, and take up item No. 82, on page 85, for acclimatization and adaptation investigations of cotton, corn, and other crops introduced from tropical regions. There is an increase in this item of \$80,000, and that is fairly well explained in the two paragraphs. \$50,000 of the increase is for enlarging our cotton-development work. I am making a distinction now between cotton-development work and the experimental work on cotton. Our experimental work we will maintain at about the present status—that is, in searching for new types of cotton, breeding cotton, and experimental work in different methods of handling cotton under different field conditions. That work will go forward on practically the same basis as heretofore. The reasons we recommend a change of policy at this time is because of the rather

unusual condition that the cotton industry is facing. Of course, that is particularly acute right now, but we believe it is still a symptom of a rather general condition that the cotton industry in this country must face.

Mr. ANDERSON. If I understand what you are trying to do, and in order to get at it as quickly as I can, under the present conditions you have in some districts a large number of varieties and characters of cotton growing.

Dr. KELLERMAN. Yes, sir.

Mr. ANDERSON. And, so far as you can, you want to standardize the character or variety of cotton grown in specific areas?

Dr. KELLERMAN. To standardize and improve; yes, sir.

Mr. ANDERSON. So that you will not have the danger of cross-breeding and the running out of certain varieties—is that the idea?

Dr. KELLERMAN. Yes, sir; we want to do for cotton what we are attempting to do for cattle. We want to get rid of the "cur dogs" in cotton. We want a better product and a better yield of cotton, and to give this country a chance to maintain its cotton crop. I do not believe that we can compete with China, India, and Egypt unless that is done.

COOPERATION OF STATES.

Mr. ANDERSON. Is this work conducted in cooperation with anybody in the States?

Dr. KELLERMAN. We have State cooperation, but this is a type of work that was developed entirely in the department, and aside from a friendly interest there is not much cooperation on the part of State agencies.

Mr. ANDERSON. Now, you have started here a big job, and one that I do not think you can possibly complete under Federal appropriations. It seems to me that you are bound in some way to enlist State cooperation in this work if you are to go forward with it. It is a big job—a tremendous job—and I do not see how you can possibly carry it on a scale commensurate with its importance on the basis of Federal appropriations alone. It is in its nature an extension proposition or demonstration proposition, and it does seem to me that you have got to enlist some State cooperation in this work if you are going to be able to carry it on a scale that will make it worth while.

Dr. KELLERMAN. I think that is true, but I do not think we can get State cooperation unless we are in a position to make more of a start than we are able to make at the present time.

Mr. ANDERSON. Perhaps I am going too fast.

Dr. KELLERMAN. I think that is one trouble.

Mr. BYRNES. What have you done up to this time in this matter?

Dr. KELLERMAN. We have established new varieties in many sections. The department has developed the Pima variety of cotton, which is a high grade of Egyptian cotton, and we have created an Egyptian cotton industry in America, in the southwestern section of the country, in Arizona and California. The bureau has developed half a dozen types of cotton of superior grade that have been rapidly displacing inferior varieties of cotton. The Lone Star is a variety

cotton that you are probably familiar with, and there are the Columbia, Trice, Durango, and Acala varieties. They are all superior varieties of cotton, and the Lone Star has been grown up into millions of bales this last year. This problem of getting people to understand how some comparatively small things are to be done if they are to maintain a satisfactory cotton industry in the cotton region is known to so few people, and it seems so hard to get people to carry on that work that we do feel that we must develop a nucleus of trained men.

Mr. BYRNES. I understood from the statement of the chairman that what you are undertaking to do is to induce cotton growers of certain communities to plant certain varieties of cotton recommended by you in order to standardize cotton growing.

Dr. KELLERMAN. That is one phase of the work. For instance, we found that the Meade cotton could take the place of sea-island cotton in localities where sea-island cotton had to be abandoned altogether because of boll-weevil ravages.

Mr. BYRNES. Do you mean that the Meade variety will not be affected by the boll weevil?

Dr. KELLERMAN. The Meade variety, in spite of the fact that it is attacked by the boll weevil, can mature a commercial crop, and it can be grown particularly in regions where they formerly grew sea-island cotton principally.

Mr. BYRNES. There is one county in my district where they used to grow sea-island cotton, but on account of the boll weevil it became necessary to abandon that crop entirely. I did not know that there was any other variety that could be substituted for it.

Dr. KELLERMAN. I think this Meade cotton is a good example of that. We have something like 2,000 acres of Meade cotton growing in this country this year. That is a cotton that was developed in this State several years ago by a man named Meade. Unfortunately, he was a victim of pneumonia a few years ago, but the cotton has been named after him. That cotton is almost like sea-island cotton, and spinners are well satisfied with Meade cotton as a substitute for sea-island cotton. However, we have only a little bit of seed. As an interesting sidelight on that seed question, a man from the West Indies came in here and bought the greater part of that seed supply and carried it back with him. Most of that seed supply is now in the West Indies.

Mr. BYRNES. I have heard about that seed down there, or about a variety of cotton that they planted that has a very long staple.

Dr. KELLERMAN. They came in and bought that seed here.

Mr. BYRNES. Then, that is how they got it?

Dr. KELLERMAN. Yes, sir. They bought it from people who were growing it in the Southern States. They were growing it down here from seed that we originally took into that region. Unless we follow these things up, and unless we can put men on these things and keep in touch with the development, and unless we can do it for the next few years, I do not think it can be done at all, because I do not think there is any other agency in this country that has either the money or the men to even attempt to do that work, and I believe it is the only way in which the great cotton industry of this country is going to be preserved in the future.

Mr. BYRNES. And what you claim is that it is necessary to keep in touch with them.

Mr. HARRISON. Why are the States not interested in this in the way that Mr. Anderson has indicated?

Dr. KELLERMAN. They are interested in it very much, but we have not been engaged in the work long enough for them to understand exactly what we are driving at. As I said, while they are giving us friendly interest, they do not see what the point is in a lot of it, and they are not putting up any money partly because their State legislatures are not giving the money——

Mr. ANDERSON (interposing). I may be wrong about this proposition, because I do not know anything about the cotton industry, but it does seem to me that you have got to begin your educational work with some agency in the States that will be able to help at some time. Of course, I understand that you have got to establish a start somewhere, but you should not be required to demonstrate the practicability and advantages of those things before you can enlist the interest of the people in the States. That may be true, but it ought not to be true. If that is the situation, I want to know it, because I can see where this thing can grow into something tremendous, and I do not want to see it started on a basis that is going to involve the Federal Government in a character of activities that I think ought to be undertaken eventually in large part by the States.

Dr. KELLERMAN. I thoroughly agree with you, but I did not quite get the point of the criticism——

Mr. ANDERSON (interposing). I am not criticizing at all, but I am trying to get the facts.

Dr. KELLERMAN. I think there is no doubt that this kind of work must be done almost entirely by the States, but I do not think they are in a position, and will not be for several years, to undertake or to carry on the kind of work that must be done. For instance, in the States of Arizona and California for a number of years we were working very energetically and successfully in developing this American-Egyptian cotton industry. The State men, some of whom knew something about cotton raising in the South, thought that we were attempting an impossible task there, and they were not particularly in sympathy with the work. They were not particularly antagonistic, but they did not care to be bothered with it. That work has gone on, and at the present time we have the most sympathetic interest in the work, and we have direct aid on the part of those States in the work.

We considered during this last year whether we could let go in California and Arizona, leaving that work to the State men entirely, because we felt that we needed the men in the East, and we needed them very badly, especially on account of this Meade cotton, which we were anxious to push as rapidly as possible; but we felt that if we did, we would be jeopardizing the American-Egyptian cotton industry, or we would be if we pulled our men out suddenly before they could put in trained substitutes. We had no trained substitutes to put in, no understudies, and no State men that could keep that machine running. That is the proposition that we face. It is merely to bridge over this transition stage until we have worked out plans and methods that are sound and that will establish this type of cotton.

Mr. ANDERSON. Is it not strange that the experiment stations in the States where cotton is the principal staple crop do not appear to show any interest in the development of the industry upon what seems to be the only basis on which it can prosper? How do you explain that?

Dr. KELLERMAN. I explain that as being a form of nearsightedness. I think it is a question of being so deeply immersed in the immediate business of the cotton industry that it is difficult to undertake work on this cotton problem which looks 10 years in the future. I think that is the reason why the department is in a position to do that kind of work, because we are not swayed by the temporary situation.

Mr. BYRNES. Boiled down, is this what you propose to do: To demonstrate the practicability of growing this Meade variety of cotton, for instance, in a given section, with the hope that, as you demonstrate that it can be successfully grown, you will induce the State authorities to aid in inducing the cotton growers of that particular State to bring up the industry—is that what you propose?

Dr. KELLERMAN. Yes, sir; that is largely it; but with that is combined this question of the adaptability of different varieties of cotton to different regions. Those two things we must be able to show.

Mr. BYRNES. You first want to ascertain what you will recommend to them?

Dr. KELLERMAN. We know that in a general way, but as between different types of soil we do not know. Neither do the States nor anybody else. For instance, our Acala cotton, which is displacing other varieties of cotton in Oklahoma and the high table-lands of Texas, is a comparatively simple problem, and all we need there is to cooperate with the State men to see that the variety can be established; but when it comes to the Meade variety of cotton, the question is much more complicated, and we must show the people how to handle that cotton. We must show them the caution that they must use if they are to keep their seed reasonably pure and prevent crossing and deterioration because of crossing with other types of cotton.

Dr. TAYLOR. It is harder to reconstruct a form of agriculture than it is to build up a new one, and that is what is involved in the matter of long-staple cotton.

Dr. BALL. Is it your idea to demonstrate it to the county agents at the same time you demonstrate it to the farmers in a community so that they may know how to keep their seed pure, and then the county agents will take it up?

Dr. KELLERMAN. We expect to depend entirely upon the county agents and State men as soon as we can get them so they can handle it.

Dr. BALL. This demonstration is to get the State men interested?

Mr. ANDERSON. I must confess that I do not think that ought to be necessary, although perhaps it is.

Dr. BALL. Cotton breeding of any kind requires a very long time and is a very expensive job, and the States have not had money enough to do that. They have not had money enough provided for the experiment stations to handle this proposition, and it would be a great waste of money for all the cotton States to carry on this breeding work.

Mr. ANDERSON. I understand that; but here you have substantially at least the initial part of a ready-made proposition that you propose to lay down there. Your plant-breeding work has been done, or some of it has been.

Dr. BALL. Some of it has been done.

Mr. ANDERSON. The foundation has been laid, and you have your plans formed. In view of that, it does seem to me that there should be some cooperation. I feel now that somebody must show me that there is enough interest in it down there to give some substantial cooperation before I am ready to go very far with this proposition.

Dr. BALL. As you know, the States are just coming in and demanding that the tuberculosis eradication work be continued, and the Government had spent a number of years on that thing before they got started.

Mr. ANDERSON. But when we started it we started it on a cooperative basis.

Dr. KELLERMAN. Originally, I think, that was taken up almost entirely by the department. I want to say one word about the Meade variety of cotton, taking that as an example. That is a cotton that is adapted to the region of Georgia and South Carolina. That is a region where the State people were very friendly to it, and were anxious to have it developed, but we were too short-handed to follow it up ourselves, and that Meade cotton came within a hair's breadth, so to speak, so far as any cotton crop in this country is concerned, of being lost.

Slips of that kind are apt to occur, and these varieties I have referred to are superior varieties. We believe that they are national assets if we take advantage of them. It seems to me that we are facing just that kind of problem if we let this go on and trust entirely to a casual interest in the States, or there may be a genuine interest in the States, but a lack of funds, until such time as it can become more generally known by the planters of the States and thereby develop a public spirit so that funds in the States will be more plentiful—unless, as I say, we go to that point, we run the risk of losing much of the fundamentally important work that we have done.

Mr. ANDERSON. How widespread will this work be to start with or where will you start it?

Dr. KELLERMAN. In the East it will be in South Carolina and Georgia and along that region where we had formerly a Sea Island cotton industry. We are anxious to push the development of improved cotton into that region very materially. We are anxious to push the development of the Acala, Trice, and the Lone Star varieties in the Texas, Oklahoma, and New Mexico regions, and the Durango variety, too, in much of the very productive cotton belt that has been largely growing inferior varieties of cotton. We have not done enough experimental work to be absolutely sure of the kind of development we want to carry on.

Mr. ANDERSON. If we agree to undertake this thing—and I am not agreeing to it now—we should have some assurance that the work will be concentrated in one or two States and try it out so that we will know where we are when we come to develop it. I do not want to start something spread all over the South in 47 different places. If we can concentrate this thing and see whether it is possible to demon-

strate an interest down there which is going to make cooperation feasible on the basis that will be necessary if it is going to amount to anything the committee will, perhaps, be disposed to try it out, but we do not want to try out something on a big scale and then have to abandon it.

Dr. KELLERMAN. That is certainly true, but the two areas that the most attention will be given to will be the Southwest, where we are anxious to develop long staple cotton, Pima cotton especially, and the Southwest valleys where Pima cotton can not be grown, but which can grow Acala or other high-grade shorter cottons, and the Georgia-South Carolina district, the high table-land region of New Mexico, west Texas, and into Oklahoma. Those are the districts in which, I think, we should specialize and are planning to specialize if we can.

RUBBER-PLANT INVESTIGATIONS.

Mr. ANDERSON. Take up your next item.

Dr. KELLERMAN. The next increase is a \$30,000 allotment for rubber-plant investigations. This request is really in the nature of an insurance fund on the rubber supply for this country. As you perhaps realize, this country is by far the largest consumer of rubber in the world and it is at the mercy of East Indian rubber producers; the oriental supply forms the bulk of the rubber supply of the world, and those countries are not only under foreign control but are more or less disturbed in their own internal conditions. The future of the rubber supply, not only in this country but in all the world, is therefore more or less problematical. I think no other important country is devoting so little attention to rubber supplies as is this country. That is the reason why we are asking for an investigation of the possibilities of rubber production in the western hemisphere, if practicable, for the production of rubber substitutes in the continental United States. There are many rubber plants or plants allied to them that have not been experimented with to an extent which might offer promising opportunities for industries in this country and which it will not be very expensive to examine. The expenditure of this sum for a few years, we believe, will clearly answer the question of the future development of the rubber supply of this country. That is a new item. I appreciate that your point of view, expressed earlier in the hearing, is against the consideration of such work, but the very unusual situation that this country in regard to its rubber supply—

Mr. ANDERSON (interposing). Of course, in that connection—if I may inject just a moment—this committee, I suppose, will have to take into consideration the question of time with respect to some of these items; that is to say, it is possible that there may be emergencies and exigencies existing at the present time which justify taking on an item because of the advantages to be derived by taking it up immediately, but I think that all problems which can be deferred for a year or two, until the Treasury is easier, clearly ought to be deferred, unless there is a clear advantage and an advantage justifiable under present Treasury conditions which would warrant us in taking up the item at this time.

THURSDAY, DECEMBER 23, 1920.

FOR THE INVESTIGATION AND IMPROVEMENT OF CEREALS, ETC.

Mr. ANDERSON. The next item is for the investigation and improvement of cereals and methods of cereal production, etc.

Dr. KELLERMAN. That is our item for cereal investigations. The work relating to the production of cereal crops, including the work of disease control, is handled under this item. I think it is fair to make the general observation that the cereal crops of the country represent one of the largest of the agricultural assets, and perhaps in many ways the most important agricultural asset of this country. The item is the largest item in our bureau appropriation. Even at that, I think it is rather plain to everybody who looks at the magnitude of the wheat, corn, rye, and other cereals of the country that we are spending a very small amount on the great potential resources that we have here. During the war the information that we had was of the greatest importance in handling the problem of rapid expansion of the bread grains, and during the readjustment period it seems that the information we have is even more important to the immediate future welfare of the country and the farmer. The necessity for enlarging our experimental work in the hope of improving the possibilities of cereal production, I think, is outstanding to anyone who gives even casual attention to it. During the war much of the advantage in yield and quality of wheat, for example, was lost through the shortage of suitable seed grain in some areas and the necessity for extending wheat areas as much as possible.

The stabilization of yield in any locality is, to a large extent, a question of determining the variety that is suitable to that locality and providing suitable stocks of seed. This is not a thing for which the department pays, of course. I mean the maintenance of seed stocks, but in the hands of the technical men of the States and the department—and apparently only in their hands—can this problem of segregating the desirable types of wheat or other grains be placed. With that generalization about what seems to be the real urgent need for improving the experimental work of the bureau in connection with the cereal work I am ready to take up the increase of \$110,195, as estimated for next year.

PROSPECT OF INCREASING WHEAT YIELD PER ACRE.

Mr. ANDERSON. My recollection is that in the history of the country the average yield of wheat has increased about 2 bushels per acre.

Dr. KELLERMAN. Yes; in about 30 years.

Mr. ANDERSON. Compared with Germany and France that is a very, very small increase. Have we any prospect of increasing that yield rapidly in the next few years?

Dr. KELLERMAN. I think we have no prospect of a rapid increase. I think the most we have is the opportunity for a steady increase, but even that we may not achieve. I think it is dependent on whether we can carry out this kind of work, whether we are going from 14 bushels on up to 18 or 20, or whether or not we are going to stick at 14 or even sag below 14. I think that is really about the situation as it

stands. The differences in the areas of wheat production is, of course, very decided, and the rather heterogenous character of very much of the seed supply is a thing that can not be overcome in any very short term of years. It would take an enormous expenditure to attempt to change quickly from the relatively poor seed supplies throughout a great deal of the wheat-producing area to better types of wheat. It would take large expenditures for educational work, but even before we reach that stage we will have to carry on more experimental work than we have at present. There are many areas as to which we are not in a position to say definitely what is the best type of wheat; for many areas we can do that.

PURPOSES FOR WHICH INCREASED APPROPRIATION ARE REQUESTED.

To go a little ahead of this discussion, the work to be carried on under the increase asked for relates directly to some kinds of wheat that have been produced. Take the Kanred wheat, a high-producing wheat for the winter wheat area in Kansas and adjoining States; that can be grown almost free of rust and is a very resistant strain and a high yielding one. That is work largely developed by the Kansas station, but in cooperation with our people.

Mr. ANDERSON. Is that a soft wheat?

Dr. KELLERMAN. No; that is a hard wheat.

Mr. ANDERSON. How does it rank in gluten content?

Dr. KELLERMAN. It is high in every quality; that is a high-grade wheat. Kota wheat is a wheat developed as a result of our cooperative work in North Dakota; that is a very superior grade of wheat and high in all of the characteristics of the wheat that can be grown in that region.

Mr. ANDERSON. Is this Kanred wheat and the other wheat you spoke of grown now in large quantities?

Dr. KELLERMAN. The Kanred is being grown in large quantities.

Mr. ANDERSON. For how long?

Dr. KELLERMAN. In quantity production it would amount to about four years.

LOW SELLING PRICE OF NEW KINDS OF WHEAT.

Mr. ANDERSON. My impression is that almost invariably new kinds of wheat begin in the market at a price relatively lower than is justified by their intrinsic value, and that it frequently takes a long period of time before they get to the place where their actual value entitles them to land.

Dr. KELLERMAN. I think that is true where there is a very material difference in type. The durum wheats are the best examples of that, where high-grade wheats depressed the price to the producer way beyond what was a fair divergence between the two kinds of wheat. That, however, does not hold here. These wheats sell on the same market, and the Kanred wheat, for instance, takes a high grade in the usual methods of grading of the hard, red winter wheats. Accordingly, the farmer is getting the immediate benefit instead of the deferred benefit that he got in the general durum introductions. As to the durum introductions, although there was a short period when

the farmers did not get what was fairly due them for that wheat, in the long run they proved their great value to the country by extending the area of wheat production and by stabilizing the yield in that area where, because of drought and rust the other types of wheat were too precarious for farming operations. So, I think, that these new varieties are fair examples of what we may hope for on a wider scale if we have a little wider opportunity for work on these other varieties. For instance, the Early Baart is a wheat that is particularly adapted to the California wheat region. That and the two Federation wheats, I think, we can safely say are the wheats for that region. The Kanred wheat is undoubtedly one of the best, if not the best, wheats for the winter-wheat area of moderate rainfall. We have a variety of durum wheat called Pelissier that, in the higher areas of Montana, Colorado, and Wyoming, is undoubtedly the best yielding and most satisfactory.

Some of these wheats, of course, will come in rather rapidly regardless of our activities, but others, like the Kota wheat, will only come in as we have men and money to put into the work. There the seed supply is not available for any general distribution, and they can not go rapidly until we can put more money in it, except in the areas where they have adequate supplies of good varieties of wheat, such as in certain sections of Kansas, in the areas where Marquis wheat is grown, where there are good supplies of wheat, and in the California areas where they have these Australian varieties. But the country as a whole is suffering from a lack of segregated varieties, tested and known to be suitable to particular regions. That is a part of the field work we are anxious to enlarge; we also want to enlarge our field stations, which, in a very few years, we believe, will be paying the country big dividends, just as the earlier wheat investigations on durum wheat and other varieties of cereals, corn, oats, etc., have returned big dividends. The department's work on oats, I think, is another place where big returns to the country and to the producers are coming. The varieties of durum wheat, oats, and other cereals that have come in have been too badly mixed to immediately serve the purposes of the country.

To recognize that these new varieties were mixtures, separating them and finding those particular varieties or strains of varieties that are best adapted to the country or to particular areas of the country and placing those to the best advantage among people who could produce them and could produce satisfactory supplies of seed for future farming, is important. The oat crop, because of the improved yields from such oats as the Welcome oats and the different Swedish selections, is undoubtedly bringing to the country a very important revenue.

Mr. ANDERSON. Will this work be directed to the situation in any particular sections of the country?

Dr. KELLERMAN. Yes, to the big wheat areas. Additional work would be continued in California, the spring wheat areas and the big winter wheat areas.

Mr. ANDERSON. What I had in mind was this—and doubtless you are more familiar with this than I am—that in the Dakotas, particularly in the western part, they have hot winds which frequently catch the wheat in the dough and they have great losses—is there

any possibility of getting away from that situation to any extent? I know we can not stop the hot winds but is there any way of maturing the crops earlier or later so that there is a possibility of getting away from that situation?

Dr. KELLERMAN. I do not think we are in a position to answer very definitely. We do feel that the wheat problem has not had sufficient study in the areas of the Old World that are more comparable to this area than the ones we have studied so far.

WHEAT GROWING ON UNSUITABLE SOIL.

Mr. ANDERSON. It seems to me there is a tendency for wheat to be grown more and more in sections where wheat growing is the most precarious; that is, in the older sections of the country, where other crops can be grown with greater profit and with more certainty, wheat is not being grown to any great extent. Take, for instance, my own district. During the war we grew a great deal of wheat and with great success, but during the last couple of years we have dropped back to where we were before the war and practically no wheat is now grown in my district. The probabilities seem to be that wheat will be grown for the most part in sections of the country like the western part of the Dakotas, Nebraska, and Kansas, where the hot winds and the lack of rainfall make it precarious at the best, and it seems to me that is where the big problem is coming.

Dr. KELLERMAN. That is to say, how far wheat farming can be safely pushed on to these lands that are not adapted to other types of farming.

Mr. ANDERSON. Yes. It seems to me that if any wheat is going to be grown it is going to come where they can not grow anything else and can not grow wheat very well. It seems to me there is your problem. There is not much advantage in monkeying with wheat in Virginia, southern Minnesota, and Iowa, where we can do something else a whole lot better than we can raise wheat and do that a great deal more profitably. I realize the probability of error on my part in connection with these matters because I do not know much about them and do not claim to know much about them, but that is the way it seems to me to be working out from the economic point of view.

INCREASE OF WHEAT YIELD IN ESTABLISHED REGIONS.

Dr. KELLERMAN. I think you are right, that that is the tendency in wheat growing here. There is this point, however, that I think deserves a little more consideration before we abandon wheat growing in established regions, and that is the extent to which the yield can be made profitable through the use of better varieties and the higher yielding varieties. Even in Ohio, which sank considerably in wheat growing, wheat as a rotation crop is almost certain to be a continuing crop.

The disappearance of wheat from some of the eastern areas—the almost complete disappearance that came with the opening of the prairies following the Civil War is not likely to be duplicated again because we have no such area of land on which that precarious plains farming can be very rapidly extended. While there is no doubt that

an extension of wheat farming in the areas where such farming is a gamble is going to continue. that is not going to be sufficient to produce the wheat that the country needs or that it will be willing to pay for, which is really the thing that will determine whether wheat growing will stay in these regions. Our experimental work is designed to give more attention than the amount of wheat produced would perhaps warrant to these areas where wheat farming seems to be just on the edge of whether it can succeed or not; we are anxious to see how far up in elevation we can find wheat varieties that can be handled and we are anxious to try to push this question of drought resistance, of resistance to rust, and of freedom from shattering and winter killing. Those are the points that we want to work on, to get varieties that we can push further and secure higher yields from than from any of the varieties that we have at the present time.

RESTORING AND ENLARGING THE CEREAL IMPROVEMENT WORK.

Mr. ANDERSON. How much money are you spending on this work now, the work which you propose to restore and enlarge under (a)?

Dr. KELLERMAN. That is now \$71,000. That was reduced, you will remember, during the current year because of a decrease in this appropriation, which necessitated curtailing a good deal of our work, and this is one of the items that was decreased below the appropriation of the previous year.

Mr. HARRISON. There was a total reduction of \$80,000 in this item, was there not, Doctor?

Dr. KELLERMAN. \$80,000: yes; so that this work was necessarily curtailed.

Mr. ANDERSON. The reduction was in the investigational part of it and not in the rust part.

Dr. KELLERMAN. The proviso for rust investigation remained the same; so that there was no change in that work. We abandoned some 10 of our field stations at that time, and with this increase we will restore only 3 of those 10; we would not attempt to restore all of our field stations even with this increase. The additional cost of the work and the necessity for more intensive work at the stations where we are following these problems means that for best results we must put in more money at each of the field stations. Is there any further point that I should cover on that first request for an increase of \$78,000?

WINTERKILLING OF WHEAT.

Mr. ANDERSON. I would like to ask a question for my own information. I have noticed in my own district and section a disposition to go from spring to winter varieties, evidently with the idea of getting away from rust, but this year the indications are that with the open winter we have wheat planted last fall that is entirely shot to pieces. I notice in this note that you have made some suggestions with reference to the winterkilling of wheat. What will you do on that subject?

Dr. KELLERMAN. We find that there is a difference in different varieties with respect to winterkilling, and that is one of the points that we are anxious to follow more critically. We believe that with more

attention being given to the selection of varieties that can stand open winters we can reduce winterkilling very much. There is also the question of the extent to which spreading straw, or a very light mulching with straw, will reduce winterkilling, even if you do not get snow. That is an important problem, and it seems to be yielding very significant results in some areas.

It undoubtedly is a protection, and it reduces winter killing very much, but it seriously increases the danger of wheat scab in the fields. If there is any wheat scab in the straw, that is the best way of making sure of infecting the succeeding crops. The extent to which that can be safely recommended, we do not yet know. We have yet to find some method of safeguarding this way of disease spreading before advocating that method of straw spreading, although that is a cheap and relatively efficient method. There is a very promising opening in the selection of varieties for winter hardiness and for freedom from shattering.

RESTORING AND ENLARGING THE CEREAL DISEASE INVESTIGATIONS.

Mr. ANDERSON. Suppose you take up the next item.

Dr. KELLERMAN. Thirty-two thousand one hundred and ninety-five dollars is requested for restoring and enlarging the cereal disease investigations. That is a general group of projects which also were greatly reduced during the present year. As a result of the decrease in the appropriation, we are spending this year very slightly over \$50,000, or, to be exact, \$50,500, for this general group of investigations. This work includes the technical studies of all the cereal diseases, with the exception of black-rust investigations, which are practically carried in connection with the succeeding work. The flag-smut investigations, which are partly carried under the control work in the next paragraph; the leaf-rust investigations, that disease causing a heavy loss; wheat scab, which seems to be a steadily increasing difficulty; corn smut; rice diseases, etc., are all carried under this paragraph.

ACTIVITIES.

Mr. BYRNES. Referring to this item of \$469,000, you have had an appropriation for this year of \$359,705. Now, why is it that every time you undertake the study of any new disease you require an extra appropriation? Is it true that the funds that you have for this year, and have had for preceding years, are not available for taking on any new studies at all? I am just wondering whether the studies undertaken three or four years ago are ever completed, so as to make it possible for you to make new studies without asking for additional appropriations. That does not apply to this item alone, but to all of these items.

Dr. KELLERMAN. I know that that point is very frequently raised, and it does appear at a casual glance as if an investigation once started simply grows and will always keep needing money. It does not look at a casual glance as if that was reasonable, and the answer to that, I think, is too long a story to cover in detail, but in general it is that our information about the fundamentals in agriculture is

pitifully small. When you come right down to it, our knowledge of plant diseases is hopelessly inadequate, and our knowledge, even of the methods of farming, is inadequate.

Before we can solve the immediate problem on our shoulders at the particular moment we find there are probably just as many more important problems that the people are clamoring for an answer to, and unless we are continually studying and working on those problems we can not begin to answer the requests for information as to what to do in particular cases, or as to what can be expected to benefit or injure all kinds of farming operations. Take, for instance, the question of these cereal diseases.

FLAG SMUT, TAKE-ALL, ETC., DISEASES.

(See p. 245.)

When flag smut and take-all flashed up as new diseases only three years ago we were not in a position to answer offhand just exactly what those diseases meant in this country. We had evidence of what they had done in Australia and some European countries, and it looked as if we had a very serious menace to the wheat industry, and it appeared that take-all was the more dangerous of the two diseases. After two years' work we found that take-all, so far as this country was concerned, was an insignificant disease and one that we did not need to worry about; but flag smut is a disease that might spread to the point of becoming a serious menace unless we can stop it; but it was nearly two years, with a staff of pretty competent men working on that problem, before we were in a position to say that.

Now, the problem in the take-all-disease work is to decide what kind of methods are going to result in keeping that disease from getting outside of Madison County, Ill., which is the only county affected at the present time. Those methods, unfortunately, are not completely known, but we are taking such safeguards as we believe to be adequate. There are certain stages in the growth of the flag smut that we do not know. We are not sure whether it is carried entirely in the soil or whether it is carried both in the soil and in the seed, and until we get that worked out we will not be in a position to make the best fight in the control of that disease.

Mr. BYRNES. I understand that; but this appropriation, I presume, would be spent in the employment of some men and scientists who could make a study of the diseases referred to in this paragraph. Now, I presume that was done in previous years when the appropriations were made, and that you have added to your scientific staff. That force, with you at the head of it, must determine always the importance of the various problems that are pending and are demanding solution; and when a problem is solved, I presume that those men are then asked to take up some new studies, but I do not think that every time you engage in a new study it should necessarily follow that you should employ additional men.

Dr. KELLERMAN. That is quite true; and in many cases we would not employ them.

Mr. BYRNES. Then, what would you use those men that you employed four or five years ago for?

Dr. KELLERMAN. Whenever we complete a project we either let the men go away to some other station or some other institution. We either drop that project entirely, or some other project may come up that is so urgent that they are allowed to go ahead on that. Take our field stations, we stopped work at 10 of them, and we are not planning to reopen the work at seven, even if we get this increase.

Mr. BYRNES. You have stopped work at 10 stations?

Dr. KELLERMAN. During the present year we have not carried work on at 10 field stations at all.

Mr. BYRNES. Because you did not have the funds?

Dr. KELLERMAN. Partly because we did not have the funds for that purpose and partly because the work at some of them was nearing completion, although it came as a sudden wrench and did disorganize some of the plans of some of the States very seriously. By an arrangement with the States in the problems that were almost completed they can patch them out in some sort of manner; but, as I have said, at seven of those stations we have reached the point where we do not believe that it is necessary to reopen them, and we can let them go.

Mr. BYRNES. What I am driving at is this: You have an appropriation this year of \$359,000. And suppose that same amount should be appropriated for next year, would it not be for you or the department to determine as between various problems submitted, knowing in advance that you could not solve all of the problems of plant life that are possible to engage your attention at this time? As I say, is it not for you, then, to determine which of the problems are most pressing and most hopeful of solution? You might determine that the problem for which you are now asking \$70,000 was more important than some project that your men have been engaged upon; and if so, you might assign some of those men to the problem that you deemed most important.

Dr. KELLERMAN. That decision must necessarily be made if we are forced to continue the work on an appropriation of \$359,000, and we must scrap some of the work that we are now doing.

Mr. BYRNES. Your position is that with the problems now presented \$300,000 would not enable you to employ sufficient force to do what you believe to be the pressing work?

Dr. KELLERMAN. That is exactly correct. I think it is totally inadequate for the magnitude and immediate urgency of these problems. I want to say again that we do not keep an organization going in any case merely because we have the organization. We are interested in the problems we are solving, and just as quickly as we can finish with an investigation, we will get rid of it, just as we are doing in connection with the citrous-canker work, as we are gradually getting to the point where we can cut that out. We will do that in any phase of our work when we reach the point where we think we have served the country as well as we can in that line. When we reach that point, the investigation is going to be discontinued.

Mr. ANDERSON. Is not this the case, too, Doctor, that very few of these problems, or the problems for which you have an appropriation of \$50,000 and for which you are asking the same amount next year, are problems that can soon be completed? Most of those problems are problems which are fundamental, and in which you have got to go

away back to the beginning, and it is seldom that a problem of plant disease can be solved in any short space of time.

You may find an emergency, perhaps, and do the best you can to meet it as you go along, but these problems are fundamental and it takes a long time to solve them, particularly if the work in connection with them has to be carried on year after year. Where the work in connection with the problem has to be carried on from year to year it takes a long time to reach a satisfactory conclusion, or a conclusion which will enable you to take your force off that proposition and put it on something else. Am I not correct about that?

Dr. KELLERMAN. Yes, sir; you are exactly correct about that.

Mr. HARRISON. It is like problems of medicine, Mr. Chairman.

WHEAT SCAB, CORN ROOT AND EAR ROT.

Dr. KELLERMAN. In connection with that disease item, I think special mention should be made of our work on corn root and ear rot. That is one of the recent problems that we have taken up, and it is a problem of great practical importance not only to the corn farmer, but to the wheat farmer. One of the diseases which is particularly bad in causing these stunted and diseased ears is also a cause of wheat scab, so that the rotation of corn and wheat, where kernels from the diseased ears are planted, is one of the ways in which wheat scab is being spread and made a serious factor in getting a yield of wheat.

Wheat scab is not a thing that is very generally recognized among farmers, because it does not have the striking appearance of the rust or smut diseases, but it does shrivel the grain and it does injure the wheat so that fewer stalks are produced, so that the yield is very seriously reduced in quantity, and it is also seriously reduced in grade. This corn root and ear rot proposition came to us originally in the seed-corn investigation. Some of the western men who were interested in seed corn had found that they were unable to recognize the difference between healthy and diseased ears through the ordinary methods of field selection, and they felt from observations in the field that they were getting losses, the exact cause of which they could not explain. We have carried on that work in cooperation, first, with the State of Indiana, and then with New York and several other States, and we understand now many of the important phases of this corn problem. We find that it has more complications than anybody supposed in the beginning. It is not the case of a single parasite that attacks the grain, but there are a good many.

We do not know which are the most important or which are the most easily spread, but the appearance of the cornfields planted from diseased ears as compared with the appearance of fields planted from the healthy ears is very striking. In a general way, a little sketch map that I have here will show about the areas involved, and the areas where the question of safeguarding seed-corn supplies, both from the standpoint of the producer of seed corn and from the standpoint of the corn grower, is particularly important. We have a rather elaborate table showing the damage and reduction in the yield of corn, but I think that is probably too heavy to give. Would you care to have that included in the record?

Mr. ANDERSON. You might include it.

(The statement is as follows:)

Estimated reduction in yield of corn due to root and stalk rots, 1919.

Dr. KELLERMAN. One of the most striking results of this work has been the development of comparatively simple methods by which farmers can safeguard their plantings. As I said before, it is not always possible to recognize the healthy and diseased ears in the fields. The kernels must be sprouted before it is possible to tell definitely whether or not they are diseased. The selected grains from the ear that is under consideration for planting are tested in a rag or paper, in what is called the rag-doll germinator. By keeping those grains warm for a few days a very sharp distinction can be made, as shown in this picture [indicating] between the ears which are diseased, and which show the darkened diseased rootlets in the germinator and the healthy corn which shows no injury at all. That comparatively simple method was tested out on a good many fields during the past year, and it shows surprising differences in the yields. It is a method by which the fields of corn that are free of the disease can be kept free of disease, and it is a method by which we should be able to gradually work out, at least, some of these diseased areas, or free them from the disease. The pictures show the type of injury that result when the diseased seed is planted. The corn is so weakened that it blows down, and much of the so-called wind damage to cornfields in the corn belt is really primarily due to this disease at the base of the stalk.

Mr. ANDERSON. On that point, I understand that there is a difference of opinion between your people and some of the State people, the State people claiming that its liability to be blown down or to fall down is due to the absorption of aluminum salts in the soil.

Dr. KELLERMAN. We do not deny at all the probability that there are other causes of the weakening which results in apparent wind damage, or increasing wind damage; but we do know, I think, that this particular fungus disease and one bacterium do so injure the plants that the wind damage is excessive and that the yield is reduced. We have made a great many tests that show that. The photograph that is shown here [indicating] I think is a good point in that regard. This [indicating] shows two groups of ears, some of which are diseased and some of which are healthy. You can not

see in the photograph, nor can the farmer in looking at the ears see, any difference between the healthy and the diseased ones; but when planted on plats which were duplicated several times, in order to get away from any variation of soil condition, it was demonstrated that the diseased ears did not yield as heavily as the healthy ears. That is consistent in all of our experiments.

That is not a particularly striking case there, and many of our experiments are very much more striking, but in all cases that we have recorded, ever since this work has been begun, the apparently healthy, but actually diseased ears, have yielded much less, and in some cases very much less, than the ears that were apparently identical, but which in our germination tests showed that they were free of the disease. This is so easy to control through the selection of the ears used for seed that we can even show (as in this photograph) how the rows, where they have been planted from the diseased ears, have been badly damaged, whereas the adjacent rows planted from healthy corn are standing up very well. It seems impossible to have any soil condition to follow rows so straight that the wind would blow down the corn in one and not in the other. I think our experimental work is beyond question, and I think we have proven very clearly the direct connection between the diseased condition and the reduced yield of corn and we have also proven very clearly the relation of at least one of these diseases to succeeding crops. In calling attention to the likelihood that people have not generally used this germinator I would like to mention Farmers' Bulletin 1176, on the control of the root, stalk, and ear rot diseases of corn. That was issued in September of this year, and, therefore, has not yet had a chance for wide circulation and undoubtedly will not be very widely read for some little time. There is always some little delay in getting ideas widely enough circulated so that a large number of people are following the latest advice. This Farmers' Bulletin shows the results of this kind of selection, both by photographs and by explaining to the farmer the probability of his getting a better yield by following the newer selection method. The question of the metallic deposits in the corn has a very interesting side light from the standpoint of the canner that I think possible should be mentioned, in view of your reference to aluminum deposits. The canners for some time have been finding great trouble with certain packs of sweet corn: they blackened in the can.

The explanations that have been given do not seem to work out very well, and that has been a problem for some little time with the canners; they have just counted as a loss a certain fraction of their pack because they could not predict just how that was coming out. That blackening in the cans has been traced as a sort of outgrowth of the work of our bureau in cooperation with the Indiana station, and it seems clear from this work that the difficulties are directly traceable to this abnormal iron percentage and that that is clearly the cause of the discoloration and of the depreciated value of the canned corn to a considerable extent. It appears that this discoloration may, therefore, be traced to these diseases and unless we can get the corn free of these diseases it is doubtful whether we can get rid of the deterioration in the canned corn.

FOR THE LOCATION OF AND DESTRUCTION OF THE BARBERRY BUSHES, ETC.,
FROM WHICH RUST SPORES ORIGINATE.

Mr. ANDERSON. Take up your eradication item.

Dr. KELLERMAN. The proviso in the cereal item, "that \$147,200 shall be set aside for the location of and destruction of the barberry bushes and other vegetation from which such rust spores originate," authorizes the eradication campaign which has been discussed by specialists of the department and of the State stations for a number of years. Conflicting evidence at first made it seem useless to attempt barberry eradication because in the Southern States where wheat was grown it was known that the rust spores could be harbored over the winter on other grasses. Some 17 years ago Denmark undertook to clean out the barberry bushes in an effort to get rid of the increasing losses from black-rust epidemics occurring there.

The effect in Denmark appeared almost magical; where epidemics had been severe and practically of annual occurrence, they rapidly decreased in severity as the barberry bushes began to be taken out, and for a decade now there has been no epidemic in Denmark. The other countries of Europe still continue to have difficulty with black-stem rust. Partly as a result of this experience in Denmark and partly as a result of the investigations that have been carried on, on a small scale, in our cereal-disease work, it seemed desirable to consider the general eradication of barberries in this country. A comprehensive plan for doing this under departmental supervision was contemplated, however, and the plan for having the department take up as a large scale campaign a wide-spread barberry eradication undertaking is really a result of interest in the States reflected through Congress; it came as a congressional direction and not as a request from the Department of Agriculture. With the undertaking of this work our information has become more and more complete, of course, and our records now show, I think beyond question, that the eradication of barberries is going to very materially increase and stabilize the yield of wheat, especially in these northern areas. We find that in the Northern States the winters are sufficiently severe to kill the winter spores so that only those spores that are harbored by the barberry are going to be left in the spring to spread an epidemic of black rust. Our field examinations are, perhaps, the most striking examples of just how the eradication of barberries is reducing the losses from wheat rust.

On the sketch map that I have here a woods containing many barberry bushes is located in about the center of the area; there are also shown the fields of different farms carrying the wheat or oats and showing the percentage of injury at different times. In 1918, before any barberry eradication was undertaken in this area, the loss in all of these regions, as shown by the figures, was very severe from black rust; in 1920 the losses were so insignificant as scarcely to be measured in any of this area, although as far as weather conditions were concerned there was every reason to expect serious losses from wheat rust. The same general point is shown in these other two title maps, and I would like you to notice these maps especially, because conditions are shown a little bit more graphically on them.

The dots on these maps indicate where barberry bushes were found; the shaded areas show, by the darkness of the shading, the degree of injury from black rust in the wheat fields or oat fields near by. As you will see from those maps, the severity of the losses seems to be in very direct ratio to the proximity of the barberry bushes. We have so many areas that have been studied in that way that we think we can say dogmatically that even now the saving in the last year from the eradication that we have succeeded in carrying on has been an important factor in the wheat yields in this northern area.

The point has been raised as to the wisdom of attempting to handle as large an area as we have had under consideration, but that is undoubtedly merely a question as to what is the best plan of attack. The maps that I have here, I think, will show in general our plan of campaign. As a result of State interest in this work and the insistence on the part of different States that they be included in the general campaign for barberry eradication, we took in the area bounded by green on this map, beginning with Ohio and the Ohio River, since that forms a fairly good natural boundary, and going through the spring and winter wheat States. After the first year's work this area proved to be larger than we could handle with the appropriation we had available. We then took into consideration the necessity of a rather long campaign and the necessity of placing our money on the areas that were likely to be most directly infested, and began on the fundamental plan of starting in the far West on more intensive work, continually pushing toward the East, in the hope that eventually we could clean up the entire area. With that plan in view we have begun the work on the western border, taking Montana, Wyoming, and Colorado, and beginning to push the work gradually eastward. You will note that a good deal of the area as shown on this map is now so handled that it will probably not need to be done over again at all.

Mr. ANDERSON. What are those portions you have in red?

Dr. KELLERMAN. The red indicates the areas where all of the cities and towns have been carefully examined and the barberries eradicated, and a careful farm-to-farm survey in that area also completed. Practically every barberry in the area in red has been eradicated; the yellow represents the area where the cities have been carefully scouted, but which has not been sufficiently scouted in the country districts. One of the great problems of this work, the thing that has made it a problem of such magnitude, is the enormous number of escaped barberries. That is a thing we did not realize in the beginning, and that is a thing which I think few people realize. People frequently say that there are no barberries in Montana and practically none in North Dakota. North Dakota was one of the States that urged this campaign, saying that she herself was clean and that she wanted the other States to take up the work. I have here a map which shows, in a rather graphic way, the number of barberries in the different sections of the country. Dots of this size [indicating] mean that at least 50 and about 100 barberry bushes have been found in that county; the larger dots mean between 500 and 1,000, and the largest dots mean from 1,000 to 5,000. There are so many barberries in these States that they would just be flat red if we dotted them in, so I wrote the figures in.

In other words, in all of this area [indicating on map] where people have been saying there are practically no barberries at all we have found barberries running into the thousands; we have nearly 10,000 in Montana, over 3,000 in Wyoming, and over 20,000 in Colorado; in North Dakota, that boasted of being cleaned up, we found nearly 5,000 barberries.

Mr. ANDERSON. When you say you have found many do you mean that you found many and that they have been eradicated?

Dr. KELLERMAN. The greater part of these have been eradicated, but not all.

Mr. MAGEE. What do you do to eradicate them?

Dr. KELLERMAN. Our practice in eradicating them is largely that of urging the farmers to dig them up, because the cost of doing it ourselves would be enormous.

Mr. MAGEE. Do they grow again?

Dr. KELLERMAN. They will not grow again if a man digs them out properly, and that is one of the main points of the campaign, to see that they are dug up properly.

Mr. MAGEE. That is what I am getting at, whether it is an easy matter to get rid of a bush or whether a part of the roots will live and grow again.

Dr. KELLERMAN. They will sprout up from roots, so that a rather thorough job is necessary, and the cost has varied from about \$1 per square mile up north to—

Mr. MAGEE (interposing). Do you point them out?

Dr. KELLERMAN. We point them out; that is, in such areas as I have shown you in Montana, where the people did not know there were any barberries. Our men go with the farmers to show them these little plants to which they have paid no attention, little plants along the fence corners and places where they would not ordinarily be hunted; they go with them and point out the barberry bushes.

Mr. MAGEE. You point out the character of the plant and leave it to the farmer to search his farm and eliminate them?

Dr. KELLERMAN. Yes; our men act merely as scouts. We have not been able to afford the actual digging operations except where an occasional bush would be found and where it would be just about as easy for our man to dig it out as to tell somebody about it. That kind of digging our man would do, but general digging operations are not carried on by our men. It is the searching out to find the barberry bushes that takes the amount of time and money, and we can not afford to carry on the digging operations. However, we have cleaned up experimental areas. An area of about 20 acres of rough and very broken country, with little seedlings on it, took a party of six men about one week to clean up, and a much larger area was cleaned up in about the same length of time. The attempt has been made to get out enough information as to how much it costs, how to do it, and what precautions are necessary in thoroughly digging up the plant—by blasting or whatever other method might be necessary—in order not to require the work to be done over again. The actual cost of digging, which apparently was authorized by the proviso in this paragraph, would have made it impossible for us to handle any significant area, and the farmer is so directly interested

in this work that it seemed to us, and it still seems to us, that we are getting the best value out of this money by doing practically no digging or other destructive work ourselves, but by depending on the cooperation of the men with whom we come in contact for that part of the work.

We are attempting to clean out the area shown in red and by gradually extending from that area we believe we will, in the long run, make the most rapid advance in demonstrating the possibility of preventing epidemics and also save money by preventing a redistribution of the escaped barberries.

Mr. ANDERSON. You feel confident now, do you, that these spores will not winter over on the grasses in the northern part of the country?

Dr. KELLERMAN. That is certain from our work.

Mr. ANDERSON. When was this work begun?

Dr. KELLERMAN. Four years ago.

Mr. ANDERSON. Last year we had a worse rust year than we ever had, did we not?

Dr. KELLERMAN. 1916 was our worst year.

Mr. ANDERSON. It was pretty bad last year, if my recollection is correct.

Dr. KELLERMAN. It was very local last year. The weather was set for a duplication of 1916, at least that is the way it seemed to us, and we had every reason to expect an excessive epidemic of black rust, but all we had were local epidemics, and the tremendous sweep of black rust, such as we had in 1916, did not occur. We have a long way to go in our barberry-eradication work yet; we have not reached the end of that by any means.

Mr. ANDERSON. These barberries grow in the woods and then spread to the fields, do they not?

Dr. KELLERMAN. Yes.

Dr. BAIL. I had charge of the barberry work in Wisconsin and Iowa and am thoroughly familiar with the whole situation in both States. At the time we began this work there was not known to be a single wild barberry in either Wisconsin or Iowa; no man had ever discovered any, but when we got down to a fighting basis we found that there was rust coming out of certain woods, and those woods, in every case, were within a mile of some old patch of barberries; never have we found a single wild infestation of barberries further than a mile from the patch.

Mr. ANDERSON. It is perfectly clear now that these barberries do grow wild in the woods; that the woods get the seedlings from somewhere; and that in many places the woods are full of these seedlings.

Dr. BAIL. Yes; but there are certainly very few places that we have not found; I think we have practically found every woods infested in those States. Now, these may possibly be one or two places that have not shown up yet, but they will show up, and, of course, will scatter rust. In Wisconsin we have found places that only had five or six plants, but we found one that had something like 2,000,000 plants: one was 8 miles long and ran down a little ravine, where the seeds were washed down a little stream and they just kept following on down. In Iowa we found one that had approximately 4 square miles, leading from a great high hill; the bar-

berries were planted on the top of the hill and just gradually worked down until they reached the lower levels. But that was exceptional.

There is one other thing I would like to call to the attention of the committee. This was begun as a war measure and we went out and asked the people in the States, as a patriotic measure, to take out their barberries. At that time all of the barberries were in the cities, and as a result of that, in Wisconsin, for example, 90 per cent of all the barberries were taken out by the people patriotically. Then immediately they turned to us and said: "Now that we have taken out our barberries we want you, under this law, to make the other fellows who did not take them out do the same as we have done." So that practically compelled us to cover that whole area in order to protect those people, and the result of that is that we have every barberry out of the cities in Wisconsin and Iowa, the two places where I have worked.

Mr. MAGEE. Do they grow in the cities?

Dr. BALL. Yes, sir; they are planted in the cities, and a large part of all the barberries are in the cities; they are planted as a hedge plant in the cities, and the cities were the places in which we worked, and the people there took them out almost entirely.

Mr. MAGEE. Are you destroying the plants in the cities?

Dr. BALL. We asked the people to take them out and where they did not we served a State notice on them to do so.

Mr. MAGEE. Just how is infestation brought about?

Dr. BALL. By the wind.

Mr. MAGEE. Carrying the spores?

Dr. BALL. Yes.

Mr. ANDERSON. These spores winter over in these barberry bushes; the barberry is a garden plant and in the spring the spores somehow or other get out into the wheat.

Dr. KELLERMAN. The spores grow on the leaves of the barberry bushes.

Mr. MAGEE. What are these spores?

Dr. KELLERMAN. They are seeds of the fungus.

Dr. BALL. If you touch one of those plants at the right time you will be covered with a yellow powder, and that powder goes off in the wind and gets into the wheat fields.

Mr. MAGEE. The wind carries it?

Dr. BALL. Yes.

Mr. BYRNES. It is like the pollen of the ragweed?

Dr. BALL. Yes; it is just like the hay-fever weed.

Mr. ANDERSON. Are these barberries still being sold by the nursery people?

Dr. BALL. Not in that area; they are not allowed to be shipped into that area anywhere, and there is a quarantine against the shipment of barberries into that area. Every nursery took their barberries out voluntarily except one.

Dr. TAYLOR. The matter was put up to the National Association

Nurserymen plainly, and they by resolution, and in so far as we have information through action of their members, have not only stopped propagating and selling the European barberry but they have specifically inserted warnings in their catalogues, in many places, and are featuring the Japanese barberry, which is not trouble-

not yet been able to work out any plan with the State by which they could be eradicated.

Dr. BALL. I am afraid Dr. Kellerman's statement may lead to some misapprehension. In the State of Iowa there is not one solitary barberry that has ever been seen that has not been eradicated, and in the State of Wisconsin there is not a single barberry that anybody has ever seen that has not been eradicated except this one infestation which they have not gotten around to. We do not go and see a barberry bush and leave it. My men had absolute orders never to leave a town without taking out the bushes.

We have gone in and given them 10 days' notice to take the bushes out, and if they do not take them out within 10 days, then we have authority under the State law to take them out ourselves. Our man never leaves a town with a barberry bush in it.

Dr. KELLERMAN. I think the question of whether this work should be discontinued as a matter of economy or whether it should be continued and completed is a question of national policy, where we can do no more than point out that we believe we are making very satisfactory progress, and that, if given the opportunity to go forward, with the very effective cooperation that we have with the different States, the policy we are now following will bring it to a very satisfactory completion in a few years, and we believe it is worth the money.

Mr. ANDERSON. I have heard it stated or estimated, from sources outside of the department, that the loss due to rust alone amounts to 200,000,000 bushels in a year.

Dr. KELLERMAN. I think that, without question, those figures are correct.

Mr. ANDERSON. Of course, if that loss can be materially reduced, to say nothing of making a 100 per cent saving on it, then this appropriation is relatively a very small investment.

Dr. KELLERMAN. That is the way we feel about it, and for that reason we would feel very regretful if it were considered necessary to cut this out as a matter of economy. We believe that there is no question that the work will have to be done at some time; and if we stop now, that will make the job immensely more expensive at the time it is taken up again.

Dr. BALL. This is the biggest thing that was ever undertaken by the department, the citrus-canker work in the area that it covered being the only one comparable with it. There we simply eliminated a hazard, and this is eliminating a hazard to our second biggest crop.

FLAG SMUT, TAKE-ALL, ETC., DISEASES.

(See p. 234.)

Dr. KELLERMAN. Referring to item No. 87, I covered that to a considerable extent in pointing out the importance of the flag-smut work to the wheat-growing regions of the Middle West. That is the main activity carried on under this item. If there is no unusual point to come up in that connection, I think what I said a few moments ago about the necessity for carrying on our cooperation with the State of Illinois in maintaining the best kind of quarantine that we know how to maintain in the area to prevent the spread of flag smut is a sufficient explanation of what we are doing.

Mr. ANDERSON. There is no infestation except in Illinois?

Dr. KELLERMAN. The infestation is in only one county of Illinois, Madison County.

Mr. ANDERSON. That seems like a large sum of money for an investigation in one county.

Dr. KELLERMAN. Of course a great deal of that money has been spent in surveying other areas to make sure that it is not spreading. This being an Australian disease, we took up all the areas into which there was any suspicion that any Australian wheat had been brought.

Mr. BYRNES. When did you begin this work?

Dr. KELLERMAN. Two years ago.

Mr. BYRNES. Have you proceeded so far that you are satisfied that it exists only in this one county?

Dr. KELLERMAN. Yes, sir.

Mr. BYRNES. What steps are you taking to restrict it to that county?

Dr. KELLERMAN. Through cooperation with the State of Illinois or through cooperation with the State officials of Illinois we see that no wheat is sent out of that area until it is fumigated with formaldehyde.

Mr. BYRNES. Who does that work?

Dr. KELLERMAN. The State men carry on that work.

Mr. BYRNES. Then, what is the necessity for both services? You have ascertained that it is restricted to this one county, and it is being so restricted by fumigation. That being true, what is the necessity for continuing this appropriation of \$50,000?

Dr. KELLERMAN. It is primarily to study the disease in the area where we have found it to determine whether it is a soil infestation, and, if it is a soil infestation, to find out what means can be followed in killing it in the soil.

Mr. BYRNES. You have restricted it to that one county?

Dr. KELLERMAN. Yes, sir; but the only way of stopping it, so far as we know, would be to prohibit wheat growing in that county and for how many years we do not know. There is no way in which we could accomplish that kind of drastic control. We are preventing the shipment of wheat out of that county unless it is treated with formaldehyde. Even now we are practically certain that that disease may be spread through wind-blown spores and that that will occur unless we find some way of gradually reducing it from year to year, until we get completely rid of it.

Mr. BYRNES. You are spending this money, then, in making investigations?

Dr. KELLERMAN. In primary investigations, although we spend some money in cooperation in the direct treatment of wheat. For instance, this last year our men carried on the work of treating the seed wheat that was planted in that region. The planters brought in their seed wheat and we treated it free of cost to them. We paid for the copper sulphate and for the labor used in giving their seed wheat proper treatment and we believe that that will materially reduce the infection of their fields this coming year.

Mr. BYRNES. Do you propose to continue that?

Dr. KELLERMAN. We feel that we must continue that until we know exactly how to get rid of it.

Mr. ANDERSON. Is there considerable wheat grown in that county?

Dr. KELLERMAN. Yes, sir; wheat is a very important crop in that county. They get high yields and they have no other crop that brings in anything like the same returns. They seem to be very insistent about the necessity of keeping on with wheat farming in that county. We first tried to develop a sentiment for some other crop so that they could get rid of wheat for a while, but we found very little encouragement for that.

Mr. ANDERSON. Do they cooperate with you in the treatment of that wheat? I suppose they have to if they can not sell it otherwise.

Dr. KELLERMAN. Yes, sir; we have had very satisfactory cooperation from them.

INCREASE IN TRAVEL EXPENSE.

Mr. BYRNES. I notice that you have an item of \$19,600 for traveling expenses in your estimate of expenditures for next year, whereas in 1920 you expended for traveling expenses only \$9,310. What is the explanation of the increase and, also, what is the necessity for so much traveling expense in that one county?

Dr. KELLERMAN. The satisfactory administration of this item will depend upon putting men in the field to be constantly going around in that area and in keeping track of everything that is happening, and in making daily examinations of the fields.

Mr. BYRNES. In your preliminary work, you are engaged in making a survey of the entire section in order to ascertain whether the infection was restricted to this one county, or not, and I can understand how in making those surveys the traveling expense would amount to a considerable sum. Now, having made those surveys, instead of having a reduction in your item of travel expense, it has been doubled. It would not seem that such an amount would be necessary for travel expense in that one county.

Dr. KELLERMAN. I think it costs just about as much for a man's travel whether he is traveling on a long trip or is making a whole series of short trips.

Mr. BYRNES. If he is in one county, he certainly does not have as much travel expense as he would have if he were making a survey of a considerable area. For instance, you do not have as much travel expense here around the city of Washington as you have when you send a man to San Francisco. I think all of us would agree to that.

Dr. TAYLOR. This feature of that item should be borne in mind, and that is that it was provided as an insurance item, an emergency insurance item. Through which effort could be made to prevent the spread of dangerous cereal diseases of this character if they got in. To a considerable extent travel is the result. That is due to the suspicion in one place or another that they have this disease. That has been the case in the past, and it is practically certain to be true in the future. For instance, some new trouble that disturbs, not merely the farmers, but the plant pathologists of the States, is reported. Now, the effective way of determining whether this thing is somewhere else is to send our capable men there to determine the facts. Not much can be done through the examination of specimens mailed in to the department. This should be understood also with respect to travel estimates in an item like this, that they are approximations, or simply the best guess that we can make as to what is likely to develop during the year. That item may be twice too large, or it may possibly be inadequate for the year 1922.

Mr. ANDERSON. What is the next item?

FOR BIOPHYSICAL INVESTIGATIONS.

Dr. KELLERMAN. There is one item on page 110, item No. 104, for biophysical investigations. So far as I know, there is no particular objection to this item on the part of anyone, either in the States or on the part of the general public. I think the decrease was made only because of the necessity for securing a reduction in the estimates.

If there is any particular objection, I would like to know what it is in order to be able to direct my remarks to that point.

Mr. ANDERSON. You might state in a general way what this work is.

Dr. KELLERMAN. This is an item under which the technical investigations, chiefly with relation to the direct reaction of certain physical conditions on plants, are carried on. The work carried on under this paragraph is without exception carried on in close cooperation with other special lines of work, but as the botanists, pathologists, and other specialists in our bureau are not usually trained in physical measurements and physical investigations, it appears to be more satisfactory and economical to have a small group of specialists who can maintain their own equipment and carry on in a cooperative way with the other men different special investigations, whether on water percolation, on the measurement of heat radiation in connection with our greenhouses, or in connection with field experiments on water movements, the water requirements in soil, the limitations on alkali movements in irrigated regions, or the simple problems relating to any of our technical studies—all of those cooperative specialized investigations have been carried on by our biophysical office. The rather extensive equipment assembled for carrying on this kind of work has been held and is available for prompt resumption of the numerous projects that have been temporarily suspended, if we can restore the item to its original sum.

Dr. BALL. For some work that item is absolutely essential.

Dr. KELLERMAN. In connection with the cotton work in the Southwest this office has rendered great service in measuring accurately the water requirements of cotton as compared with alfalfa and other crops, and in the technical investigations that work has been of great benefit in working out the practical problems in that region. Many of the lines of work that were underway were designed, we believe, to solve some troublesome questions, and we hope this item can be restored.

FOR THE INVESTIGATION OF DISEASES OF COTTON, POTATOES, ETC.—WHITE-POTATO DISEASES.

Dr. TAYLOR. Mr. Chairman, with your approval, I will turn to page 80 and take up item 78, resuming the regular order of the items in the bill. This subappropriation for the investigation of diseases of cotton, potatoes, truck crops, forage crops, drug and related plants is the appropriation under which the study of the fungus and physiological diseases of those crops is carried on. There is an increase estimated in this item of \$30,000 which is needed specifically, first, \$5,000 for potato-disease investigations. Of course this refers to the so-called Irish or white potato. The potato is grown in America at this time probably under a wider range of conditions than in any other country. The result is that we have to face about all the troubles that the potato can have in the world, except as we are able to exclude through the prevention of the introduction in shipments certain of those that we know exist and that can be determined by examination and excluded by quarantine. The important features here at present are certain of the little-understood

diseases which are seed borne or carried by the seed potatoes. Seed potatoes are shipped very largely from North to South in our commercial potato growing. To a larger extent than with any other crop there is a regional movement of seed each season from Northern States like New York, Michigan, Maine, Wisconsin, and Minnesota to more Southern States like Virginia, in the Norfolk area; the Carolinas, Florida, Louisiana, and Texas. The work on the potato diseases is, therefore, of peculiarly widespread importance to the potato industry. The principal need for an increase in this case is to meet the increased cost of doing the work now under way.

Mr. ANDERSON. How much are you spending on this item now?

Dr. TAYLOR. I have not that specific statement. I find that it is merged in with the general truck-crop project, but I can furnish you that figure.

Mr. ANDERSON. I think the committee will be able to pass on some of these questions to better advantage if they know what is being spent in connection with the item for which an increase is being asked.

Dr. TAYLOR. I will furnish you a statement in detail of the expenditures now being made under this item.

That allotment for potato-disease investigations for 1921 is \$17,205.

SWEET-POTATO DISEASES.

The second portion of the \$35,000 is \$5,000 for sweet potato disease investigations. This is a crop, as you know, that is grown chiefly in the States from New Jersey southward, and increasingly in recent years in California.

The importance of the crop commercially has increased very greatly during the last two or three years as better methods of curing and handling the potatoes from the digging time and through the winter have been developed. The practicability of storing and holding, and in that way distributing the crops throughout the winter season is largely dependent upon the control of the field diseases and the production of a clean crop.

COMMERCIAL PRACTICE IN ADOPTING NEW METHODS OF HANDLING.

Mr. ANDERSON. I would like to ask this question, which has a general bearing upon the discussion of new methods of handling so as to eliminate or reduce the prevalence of rotting, we will say, in storage. To what extent does the commercial practice take up these new discoveries that you make, or how rapidly are those discoveries absorbed in the commercial practice?

Dr. TAYLOR. Much depends upon the simplicity of the remedy. If it were possible, as it is in a few cases, to say that certain diseases in the crop which is to be shipped can be controlled by the washing of the crop with a certain fungicide, and by doing this in a large way, as lemons and oranges are handled, for example, there is an immediate, quick, and almost premature adoption of the practice. If the remedy requires starting back at the beginning, in the selection of the seed roots, as in the case of the sweet potato, for growing plants which are later to be transplanted in the field, and requires

that at digging time they are to be dug and handled carefully, that they must be stored and cured by warmth as is necessary with this crop—in such a case as that, it takes a long time to get the commercial practice up to the known advisable method.

Mr. ANDERSON. I imagine, then, that the adoption of a practice would be in ratio with the facility that it could be carried out.

Dr. TAYLOR. To a large extent; yes, sir. When we are in a position to say to producers' organizations, "These things are essential to the holding of your crops so that you can market them from October through until March," we can get a much more prompt adoption and a much more prompt projection of the results of our scientific work into the industry itself than when we have to deal with scattered independent farmers. I may say also that we have persisted in our teaching of methods of handling many of these perishables until now it is much easier to get a method started than it was 10 years ago.

TRUCK CROP DISEASES IN CALIFORNIA.

The next item under this head is an increase of \$3,000 for the investigation of truck crop diseases in California. These crops are, in the main, lettuce, cauliflower, and other highly specialized crops grown for long-distance shipment out of the season when they are available near the eastern consuming centers from local production. It involves, for instance, the lettuce that is coming into this market now from California and similar crops. The determination of how these are to behave in transportation and after delivery must very largely be in the field. The diseases in many cases are obscure and the treatment that is required to protect the crop from disease differs with the different climatic conditions prevailing in those particular localities. They are highly intensive products generally.

NEMATODE DISEASES OF TRUCK AND FORAGE CROPS.

The next item is \$4,000 for investigating nematode diseases of truck and forage crops. This nematode type of organism is one which attacks a wide range of crops. One species is the cause of the so-called root knot diseases of crops in the south, including vegetables, peach trees, and fig trees; another species is destructive to sugar beets; still a third, and one that is as yet little known in this country, is causing much apprehension in the clover seed producing territory, especially in the State of Idaho.

Mr. ANDERSON. You have been after that bug for quite a while, have you not?

Dr. TAYLOR. The nematodes in general; yes, sir. The root knot diseases in those sections of the country where the ground does not freeze more than three inches deep each winter have long been recognized as seriously troublesome, especially in the coastal plain region of the South. This clover nematode was first observed in this country about two years ago and was found as a result of closer investigation of the causes of winter killing; the clover stand which was good at the start appeared to die out during the winter. It was thought at first to be a winter killing of the crop, but this organism

was found on it and it is now fairly clear that it is the most serious trouble that we face with respect to clover in the Pacific Northwest.

Very careful investigation is being made of the question whether this is likely to be carried to other parts of the country in the seed, and so introduced in the humid clover territory, thus becoming established in that territory and maintaining itself there. It is peculiarly important because of the fact that the Northwest is becoming an extensive producer of high quality clover seed, which is being shipped to other portions of the country farther east.

WATERMELON AND CUCUMBER DISEASES.

The next feature is an item of \$5,000 for watermelon and cucumber disease investigations. These crops are important in certain portions of the country, the watermelon, especially in the South. Some of the diseases have been found capable of almost complete control. There is one example in the case of the stem-end rot of watermelons. By a treatment of the melons when cut from the vines for loading into the cars there is possibly a practical insurance of the fruit while in transit. There the method is so simple—merely the swabbing of the fresh-cut stem with a fungicide which is readily furnished in a bottle with a brush attached—that the industry has adopted it very readily, but control methods that require repeated spraying of the fields and that require the exclusion of diseased vines from the manure piles, the manure going into the hills of the melons, are much slower to be adopted.

PEA DISEASES.

The next item is \$3,000 for the investigation of pea diseases. These pea diseases are of especial importance to the canning industry which, in the Northern States in particular, is an important industry. A small appropriation is available now for work on these diseases, but an additional man is needed for the next year.

Mr. ANDERSON. Is this intended for work on canning pease or forage peas?

Dr. TAYLOR. The diseases are chiefly troublesome to the canning types of peas; some of them are root borne and quite probably will require to be controlled through the working out of effective crop rotations, and some of them are seed borne; not very much as yet is known about them.

Mr. ANDERSON. Are these diseases quite prevalent?

Dr. TAYLOR. In scattered locations, in so far as known. The pea crop is one of those crops which is sensitive to extremes of heat and drought, so that it is rather difficult to determine, except through continued observation and through experimentation, whether a particular disaster was due to unfavorable weather or to some specific organism which was on the crop, so that the diseases are rather obscure and require careful investigation. There is another feature of the canning pea which I would like to discuss a little further along in connection with another item, which has assumed very great importance to the canning industry this year, but that is not a disease and is not affected by this item.

CABBAGE AND ONION DISEASES.

An increase of \$3,000 is needed for cabbage and onion disease investigations. Both of these are important crops to the Northern and Eastern States. Both, of course, are grown to an extent as truck crops in the trucking regions of the South, along the Atlantic coast and the Southeast and in the southern portions of Texas. The need for the funds is to adequately enlarge the existing research activity.

FORAGE CROP DISEASES.

One thousand dollars is needed for forage crop disease investigations on which we are spending a small amount this year, the special thing here being for work on a larger scale on stem rot and stem blight diseases of clover, alfalfa, root rot, etc.

PATHOLOGICAL MARKET INSPECTION.

One thousand dollars additional is needed for our pathological market inspection work of vegetables. This is an item paralleling that which I mentioned in discussing the item for fruit disease investigations. It is the expert determination of the identity of the diseases found on products which, when arriving at the markets are found decayed and deteriorated. This item we have been able to carry on during this year but need the additional \$1,000 for additional expenses. The fruit pathology item, which should be driving in team with this, we have not been able to finance.

FOR INVESTIGATING THE PHYSIOLOGY OF CROP PLANTS, ETC.

The next subappropriation is "for investigating the physiology of crop plants and for testing and breeding varieties thereof." This subappropriation covers a wide range of creative work, particularly with reference to the determination of the requirements of certain crop plants new to this country, relating to the South and the Southwest. Our citrus fruit breeding work and most of our fig work is covered here.

DATE CULTURE.

The particular feature for which we ask an increase of \$20,000 is for enlarging our date culture investigations which are entirely in the Southwest. The work now under way is in the desert regions of southern California, Arizona, and in southern Texas. There is need for extending certain features of it there and in some of the extreme southern hot valley portions of Nevada and Utah.

Mr. ANDERSON. Is not this industry getting so that it can stand on its own feet?

Dr. TAYLOR. It is at the moment in a rather difficult and precarious condition. We have here this unusual feature: That only in the hottest and driest portions of the country is there any probability of successfully establishing date production.

Mr. ANDERSON. You have no hope of establishing it in Alaska or anywhere like that?

Dr. TAYLOR. No, sir; it will always be a geographically restricted industry. It is, however, one crop which gives promise of succeeding in the excessively hot southwestern desert territory where water is available for irrigation. I believe the Arab says, "The date must have its head in fire and its feet in water" in order to succeed. The beginning that has been made is tremendously encouraging, provided it is held in its development to practical and safe lines and provided the varieties to be grown are in large degree restricted to those which will yield a distinctively choice product which will not be in competition with the cheap and more or less dirty imports which come in large quantity from some parts of the Orient. There is some danger that in the impetuosity of desire to propagate those which can be easily propagated, and of which there is a considerable stock already in this country, that there may be a stocking up of the eligible territory with the less valuable varieties of dates.

Mr. BYRNES. You hand us this box of dates. Where are these from?

Dr. TAYLOR. These are from the date garden which the department maintains at Mecca, Calif. The peculiar limiting factor in the development of the date culture, other than these climatic factors, is this: That a date tree once planted is there beyond any possibility of a change in its character; it is the one fruit which can not be made over by budding or grafting; it can only be perpetuated through the rooting of the offshoots which come from the base of the tree during the early years of the life of the tree. After the tree is in full fruit—and it is a long-lived and productive tree—its production of offshoots gradually ceases, so that the character of your industry is determined by these plantings that are made.

Mr. ANDERSON. How extensive is the industry now?

Dr. TAYLOR. I do not know that I can tell you the number of trees that are now growing, but I think I can furnish you an estimate of the number.

Mr. ANDERSON. I mean are dates being produced commercially in this country at the present time?

Dr. TAYLOR. Yes, sir. They are not, however, in sufficient supply to reach the eastern markets except as special sample shipments. We are importing many millions of pounds of relatively inferior dates, although these importations were interrupted by the war. Our imports come largely from the Persian Gulf region, and to some extent from Algeria. This type of date, the Deglet Noor, is the highest priced commercial date of the Sahara Desert, and is the high-priced date of London, Paris, and the cities of Europe generally, and it is the one which the department is commending and urging to be developed. It is a late autumn date.

Mr. ANDERSON. Is the industry developing independently of the supervision which you are undertaking to give it? I mean by that, is anybody going out and trying to do it without any suggestion from the department?

Dr. TAYLOR. Yes, sir; there is a tendency on the part of investors to go faster than the department is willing to approve, especially to plant what can be gotten now without awaiting for the propagation of more desirable kinds. We have not yet a sufficient stock of all the desirable kinds to meet the planting requirements, and no com-

mercial importations can be made at the present time under the quarantine regulations which it was necessary to establish in order to keep out a destructive scale which infests practically all the established date trees of the Old World; it came in the very early importations to this country some 20 or more years ago. An eradication of that scale is in progress, with every probability that it can be cleaned up. So that we are endeavoring to keep this industry clean and to develop it along national practical lines that will make it an enduring asset in our national economy.

Mr. ANDERSON. At what would you estimate the present commercial value of the output in this country?

Dr. TAYLOR. It would be a good many thousand dollars, but I could not say just how much. From one particular 23-acre planting, I think it was, of seedlings—which are always varying in quality and character—there was sold last year over \$20,000 worth of dates.

Mr. ANDERSON. How long does it take this tree to mature?

Dr. TAYLOR. The trees begin bearing at about the fifth or sixth year, where conditions are favorable, and coming in rapidly after that. As far as we know, a tree will live and produce for 60, 75, or 100 years; we do not know the full life of a tree.

Mr. MAGEE. And bearing all that time?

Dr. TAYLOR. Yes, sir; but not reproducing their kind through offshoots except during the earlier years of their life.

Mr. MAGEE. What do you mean by that?

Dr. TAYLOR. Not throwing these offshoots, which are the only method of perpetuation of the varieties.

Mr. MAGEE. That is, you use those offshoots for propagation purposes?

Dr. TAYLOR. Yes, sir.

Mr. ANDERSON. The trees do not grow from seed?

Dr. TAYLOR. They grow but they do not reproduce the variety true through the seed.

There is, however, one important feature that this work involves, namely, that of growing a sufficient number of pedigreed seedlings of the best ones, like the Deglet Noor, to determine whether it is not possible to develop in that way some few superior varieties that will fit our particular conditions better than those which we are importing. In our other fruits, as in the case of our apples and peaches, we have developed in America a line of varieties which now constitute practically the complete basis of our commercial orcharding. That is less true in the case of the pear, and not at all true of the European grape.

Mr. ANDERSON. This appropriation will enable you to speed up this work and do it faster?

Dr. TAYLOR. Yes, sir; and to bring in here offshoots of some highly desirable varieties.

Mr. MAGEE. Is that variety of date now sold in America?

Dr. TAYLOR. In Los Angeles, Calif., and nearby cities in a small way. Some of the niceties of this may be of interest to you in connection with this variety. It was not known when date growing began in this country that the entire product of the Deglet Noor, which is grown in Algeria and in the Sahara back of Algeria, was in fact processed in a certain way to develop the peculiarly fine qual-

ity which had brought the highest prices in the European market. Through the joint activity of our bureau and the superintendent of the French experiment station in Algeria, with whom our men are in close working contact, there has been worked out a method of tree ripening or curing the fruit in a closed bag. At a certain stage of development the fruit is held in the right humidity, or temperature, so as to bring out the fineness of texture and delicacy of flavor that are shown. Dates are probably one of the oldest tree fruits upon which man has relied for sustenance. It is one of the least known to Occidental man in its requirements.

Mr. BYRNES. Will these dates grow in Arizona?

Dr. TAYLOR. Certain of them will. The Deglet Noor probably requires a longer season than occurs in most parts of the Salt River Valley, or a higher total of heat than occurs there. It requires a larger total of heat because the maturing of the date depends largely, not only upon high temperatures, but high temperatures for a long time. Certain other varieties, however, it is perfectly clear, can be grown in the Salt River Valley. There is an indication that certain varieties can be grown in the Rio Grande Valley. We have a little planting at Laredo, Tex., that we need to enlarge. It is one of those highly specialized plant activities which is not being worked on by the States to any extent.

FOR SOIL FERTILITY INVESTIGATIONS.

Mr. ANDERSON. What is the next item?

Mr. TAYLOR. The next item is No. 81, on page 84, for soil-fertility investigations. This is the subappropriation under which we study the crop fertilizing elements, particularly during the last two or three years the newer sources of fertilizer and their relation to plants, both from the standpoint of nutritional usefulness and toxic destructiveness. Both sides have had important aspects as the result of the combing of the world for fertilizer supplies, and as a result of the disorganization of the machinery of commerce and transportation during the war, and the utilization of many of those fertilizer elements for other purposes, such as the manufacture of munitions.

SOIL TREATMENT IN THE CONTROL OF POTATO SCAB.

We ask an increase there of \$15,000 particularly for two features: The first of these is \$5,000 for the study of soil treatment in the control of potato scab. This is essentially a study of the effect of sulphur and its compounds applied to the soil in connection with the fertilizing of the potato crop, the organism which causes scab being greatly influenced by the soil immediately surrounding the growing portion of the plant. Apparently the organism does not thrive, and, therefore, does not seriously damage the crop in a soil that is acid to a certain degree. That particularly immediate localized acidity has apparently in some experiments been produced by the application of sulphur as a fertilizer to the crop. It opens a line of control of that disease which otherwise is not controllable by any method known, which it appears highly desirable to follow out. The work is under way in cooperation especially with the New Jersey experiment sta-

tion where the damage by scab to the merchantable crop of potatoes is sometimes very heavy.

Mr. ANDERSON. This is the item under which some attempt was made once to treat scab by means of steam pipes, is it not?

Dr. TAYLOR. Possibly the item you have in mind was the work on the disinfection of soils in an effort to completely eradicate the potato wart organism. That is in a different place. This, as you will observe, aims to control the disease, not through a specific spray, or dip, or any application to the plant, but through a corrective application in the fertilizing of the crop at planting time. We do not know just how far we can go, but it looks promising.

Mr. ANDERSON. What are you spending on this scab work now?

Dr. TAYLOR. All that has been done so far is some incidental work in connection with other fertilizer experiments.

Mr. ANDERSON. You are doing something for the scab now. are you not?

Dr. TAYLOR. Yes, sir; in the investigation of the organism and of the organisms which cause the several different types of potato scab. That is under the item for truck-crop diseases.

EXPERIMENTS WITH NEW FERTILIZER MATERIALS.

The second portion of the increase of \$10,000 is needed for extending the experiments with new fertilizer materials, and the experimentation with them on different crops in different portions of the country so as to get at their practicability for use in commercial fertilizers. One of the features in that which has been of rather major importance during the last year has been the working out of the effects of borax in fertilizer on crops to which the fertilizer was applied.

Mr. ANDERSON. You did that year before last, did you not?

EFFECTS OF BORAX IN FERTILIZER.

Dr. TAYLOR. That was begun year before last; yes, sir. There has been during this growing season just closed a very useful and significant outcome of that, and there is now at the Arlington farm—I saw it about two weeks ago—a most spectacular illustration of the enduring effect of borax applied to crops last spring, such crops as corn, potatoes, and beans, which have been followed by wheat sown in October and which is now growing, and where the wheat that followed the corn rows and the bean rows shows now the yellow leaves which indicate borax injury. Although the application was made last April or May, it shows in some cases distinct and serious injury from applications as light as 20 pounds to the acre of borax, and in some cases even from 10 pounds to the acre. This is a question of vital importance to the fertilizer-using portions of our agriculture, as well as to the fertilizer industry, which found itself seriously involved through damage to crops before many of those concerns knew that there was any danger.

Mr. BYRNES. What kind of fertilizer were you using on those crops?

Dr. TAYLOR. Chiefly potash fertilizer which contained varying percentages of borax.

Mr. BYRNES. That was a domestic potash?

Dr. TAYLOR. Yes, sir; a domestic potash.

Mr. BYRNES. You knew already that most of the potash produced here did have a large percentage of borax in it, did you not?

Dr. TAYLOR. No, sir; that was not generally known.

Mr. BYRNES. When?

Dr. TAYLOR. At that time, a year ago last spring.

Mr. BYRNES. It was known this past spring by everybody who used it at all.

Dr. TAYLOR. It is clear now from information that has been assembled during the last two years that it is not possible to secure many of those important elements of fertilizer free of borax. Nitrate of soda, as it comes from Chile, carries some borax, and our domestic potash from the southern California region carries some. The important thing now is to determine the limit beyond which it is not safe to go.

Mr. BYRNES. You did that pretty well, I thought, this last year.

Dr. TAYLOR. Not at all with respect to its cumulative effect and the endurance of the injury. I might say this: That within the last three months I understand one suit involving some \$300,000 of money reimbursed by a fertilizer concern to farmers who were damaged by the fertilizer that that concern sold has been compromised rather than go to trial through the courts.

Mr. BYRNES. They are suing them all over the country. There is nothing unusual about that, because there are suits being brought all over the country.

Dr. TAYLOR. During the last two years; yes, sir.

Mr. BYRNES. That is a matter of common knowledge.

Dr. TAYLOR. But the point is this: Here was a damage admitted by one concern amounting to that sum.

Mr. ANDERSON. Do you know how much borax you can apply to the soil without damage?

Dr. TAYLOR. No, sir.

Mr. ANDERSON. You knew it once and you ought to know it still.

Dr. TAYLOR. We do not know that with exactness. We established a limit which, in our judgment, was a safe limit.

Mr. ANDERSON. What is the use of going on with this thing with the idea of permitting more borax, perhaps, in the fertilizer, because the more you get in it the worse off you are. It will not do any good there.

Dr. TAYLOR. It will not do any good there, and it is likely to do harm. Still it is likely to be there, and there is no Federal control of borax in fertilizer except under the war control.

Mr. BYRNES. Will not the control work out in this way: If a fertilizer company sells potash fertilizer with such a percentage of borax in it as to injure the crop, the user of the fertilizer will sue for the damage, just as is being done now. Is not that a very effective deterrent?

Dr. TAYLOR. Yes, sir. If a given percentage of borax in every case, or in 75 per cent of the cases, worked visible damage to the crop, it would be a comparatively easy thing to settle; but complications arise from the fact that the injury resulting from borax is determined largely by the relation of the rainfall and the growing

weather at the time of the beginning of the growth or the germination of the crop, so that it varies from year to year.

Mr. ANDERSON. If I may be permitted, what I am interested in is what information are you after now that will have some practical value to somebody. I know that I have an uncle somewhere in Sweden and that it will not be of much value to him, but I want to know what information you are getting here that will be good for something.

Dr. TAYLOR. We are trying to get information sufficiently definite with respect to the extent of the damage and the conditions under which the damage occurred to be able to say positively that not to exceed a definite limit of borax in fertilizer is safe. It has this other radically different application, that as this work on borax, which started with borax in fertilizer, has developed it has suggested the strong probability that some of the most obscure and difficult alkali damage in the States of the irrigated West may be due to the effect of borax naturally there, but which previously was not recognized as sufficient in amount to determine that damage.

Mr. ANDERSON. If you carry this investigation through all sorts of crops, until you absolutely ascertain to a fractional percentage how much borax you can have in fertilizer, we will be engaged in this work for the next 50 years.

Dr. BALL. I think what has happened here in the experiment at Arlington indicates the point in a simple way.

Mr. ANDERSON. It must be indicated in a simple way, if I understand it.

Dr. BALL. The most important question facing us is whether the small amounts, too small to produce serious damage to the crops, or too small to give the farmer the right to say that it will materially damage his crop, if added to year after year, will produce that damage. That is one of the problems that we know nothing about. Our notion was that in one season of rains, thaws, and leeching, any borax would be washed out of the soil to a degree that would make the soil normal. Our experiments in some irrigated regions with borax and in our greenhouses at Arlington have shown that borax moves with surprising slowness in the soil. Amounts in the soil so small that they do not produce any visible injury at all, yet, if added to year after year, may start a deterioration in the soil that no person at the present time can locate at all. Unless we find that out we will not be in a position to give the farmers and the fertilizer people constructive advice in respect to the borax problem. The biggest question involved in the borax problem now is whether it will accumulate in the soil in such manner as to produce that sort of damage.

Mr. BYRNES. The question with you is whether this accumulation of borax in the soil will do damage in after years?

Dr. KELLERMAN. We are very much afraid that that may be the case.

Mr. ANDERSON. How much are you spending on this borax work now?

Dr. TAYLOR. We are now using on the fertilizer and soil amendment work \$15,091, and about half of that is used for borax work this year. It is in cooperation with some of the three States representing typical climatic and crop regional conditions.

INVESTIGATION, TESTING, AND IMPROVEMENT OF PLANTS YIELDING
DRUGS, ETC.

If there is no further discussion of that item I will pass to the item "for the investigation, testing, and improvement of plants yielding drugs, spices, poisons, oils, and related products and by-products and for general physiological and fermentation investigations." This item, for which we have \$39,820 this year, it is requested be increased by \$26,000. That estimate includes the restoration of a reduction of \$20,000 made in this item last year. As you will observe from the wording of the item there are two somewhat different types of work carried on.

Mr. BYRNES. As a result of the reduction did you have to curtail the work you were doing?

Dr. TAYLOR. Yes, sir.

INVESTIGATIONS OF DRUG AND RELATED PLANTS.

Mr. BYRNES. What work did you curtail?

Dr. TAYLOR. We had to practically abandon the field work on drug plants.

Mr. BYRNES. You now propose to reengage in that work?

Dr. TAYLOR. Yes; and it is highly important that we should.

Mr. BYRNES. Is it the same character of work that you were engaged in prior to the time that Congress reduced the funds and compelled you to abandon it?

Dr. TAYLOR. It is, and it is for the purpose of readjusting the work to date. At present the field work is substantially restricted to what can be done at the Arlington farm where, of course, only one set of conditions can be had.

Mr. BYRNES. What do you want to do with this—establish experiments at other points?

Dr. TAYLOR. Yes, sir. We wish to undertake the growing of certain promising drug crops, in which there is very great interest among the people and about which there is a very great lack of information, especially as to the practicability of their proper commercial production. The work involves not only the growing of the crops but a close chemical study of their composition in order to determine whether they are equal or superior to those which we import and which constitute, in large part, our present source of supply.

Mr. BYRNES. What plants, for instance?

Dr. TAYLOR. In addition to camphor, such crops, for instance, as digitalis, from which the heart stimulant is obtained; belladonna, cannabis, and plants yielding volatile oils for which there is strong demand, such as bergamot mint. Some very promising studies of producing useful fixed oils from such plants as lallamanda, perilla, and chia should be resumed in the field, also the recovery of useful oils from crop wastes, such as fruit seeds at canneries, wheat screenings, etc.

Mr. BYRNES. Are you working on that at Arlington?

Dr. TAYLOR. At Arlington somewhat; it needs work, however, in the southeast, where you may recall the paprika pepper work was done under this paragraph, and brought through to a point where it

was a localized profitable industry. That was one of the developments of this. The question also of camphor production in this country, in so far as the department or any scientific agency is at work upon it, centers back into this paragraph. We had to abandon our field station at Irlando, Fla., where the only known careful experimentation on camphor was under way. We are at present entirely at the mercy, so far as our commercial supply of camphor is concerned, of the Japanese Government controlled monopoly of camphor. Our best celluloid, of which there is now a large production in this country, requires camphor. It is a situation which easily might, under particular international conditions, develop seriously. There is a large investment being made by a few large concerns in commercial efforts at production, but there are numerous questions, both of the growth of the crop, the determination of the best methods of harvesting, distilling, and producing it, which should be steadily and progressively studied. A small increase of \$1,000 is needed for our poisonous plant investigations.

Mr. ANDERSON. How much are you expending under this item now?

Dr. TAYLOR. \$19,898.

POISONOUS-PLANT INVESTIGATIONS.

Mr. ANDERSON. And how much under the item for which you are asking \$1,000?

Dr. TAYLOR. \$2,500. I may say of that item that the Bureau of Plant Industry carries the plant-determination phase of that work and the Bureau of Animal Industry carries the investigation of the effect of the poisonous plants on the animals; so that there is a close cooperation there and no duplication of the work of the two bureaus.

Mr. ANDERSON. Does the Forestry Service carry on any of this investigation work?

Dr. TAYLOR. The Forest Service has this relation to it, and a good deal of this work does involve the forest reserves: Where plants poisonous to live stock occur, and when the work of the Bureaus of Plant Industry and Animal Industry makes clear that there is an area infested with a poisonous plant which is capable either of eradication or of control through some special method of grazing or systematic treatment of the area, the Forest Service, which administers the forest reservations, takes charge and puts it into effect. It is an effective three-party cooperation.

PLANT PHYSIOLOGICAL INVESTIGATIONS.

The third portion of the combined restoration and increase—and this is entirely restoration—

Mr. ANDERSON (interposing). How much are you spending on this now, if anything?

Dr. TAYLOR. We are spending this year \$14,186.

Mr. ANDERSON. This does not involve any additional work.

Dr. TAYLOR. This is merely the restoration that we ask of the reduction in this fundamentally important group of plant physiological investigations.

Mr. ANDERSON. What is the difference between this item for physiological investigations and the item which we discussed this morning?

Dr. TAYLOR. This has to do specifically with what grows in the plant, and that is the fundamental difference between it and the biophysical investigations. It is a study of the physiological processes of plants, certain of which are not yet understood, and which are basic for future progress in the study of plant diseases, for we do not yet know what happens physiologically in a normal plant in very many cases.

Mr. ANDERSON. You do not ever expect to know that, do you?

Dr. TAYLOR. We shall need to know much more than we do before we control some of these pests, and we shall need to know that if we are going to get forward in our agricultural production. It is not a project on which we can spend effectively very much money, but it is one which is highly important to have going.

Mr. ANDERSON. I was not suggesting, of course, that it was not necessary, but simply that it is an interminable investigation.

Dr. TAYLOR. Man will need to continue this type of work so long as he lives out of the soil. This curtailment of \$10,000 could only be accomplished by letting out skilled, experienced, and highly efficient men; they went to other places at better salaries than we were paying them, radically better, from 50 to 60 per cent better in particular cases.

Mr. ANDERSON. In the Government service?

Dr. TAYLOR. No, sir; in some cases to the State institutions, however.

Mr. BYRNES. I was going to say: Where else would they go?

Dr. TAYLOR. The head of this work went to the University of Pennsylvania from a department salary of \$3,760 to \$5,500, with perquisites and additional features which represented a still larger income. We now have in sight, through a readjustment and realignment of work in another place in the bureau, a man who is qualified to go forward with it; but a cut of that character suddenly in a field where persistent and continuing work is essential, and a psychology that permits of a fair degree of continuity of thought and action, is a tremendously serious thing in scientific work. However, we have the foundation preserved.

Mr. ANDERSON. That is one reason why I am somewhat reluctant to start these things without some pretty good promise of prompt returns.

Dr. TAYLOR. That is an important thing; it is not wise to start unless it is clear that such a project is important and that there is a fair prospect of a sufficient continuance of it to make it worth while.

FOR CROP TECHNOLOGICAL INVESTIGATIONS, ETC.

In item 84, page 88, no increase is requested. The distinguishing feature of this work is the technical study of the plant-infesting nematodes, which are a group of organisms tremendously numerous, widely distributed, and very little known, but which in particular instances—as in those cases of the southern root-knot nematode, the sugar-beet nematode, and the clover nematode—are known to work serious damage.

Mr. ANDERSON. Do these animals usually have the same general manifestation on the roots?

Dr. TAYLOR. Of different plants?

Mr. ANDERSON. Yes.

Dr. TAYLOR. They all produce galls on the roots, yes, though several of them—although we do not know how generally this is true—are restricted in their attacks upon agricultural plants to a comparatively narrow range. But this is now known as one result of this work: That there are among them certain cannibalistic nematodes which eat other ones.

Mr. MAGEE. Is a nematode an animal?

Dr. TAYLOR. It is animal rather than vegetable.

Mr. BYRNES. We had an item a while ago for nematodes affecting particular plants. Is this for the investigation of the nematode family generally?

Dr. TAYLOR. Yes; this is the technical investigation of nematodes generally, the study of which in any systematic way, with respect to agriculture, is a relatively recent line of scientific development.

Mr. BYRNES. What is the result of the recent studies and investigations being made?

Dr. TAYLOR. We have made progress in particular in the determination of the numbers, the range, and character, and they are endeavoring to get at the relationships of these organisms to each other. There is a possibility, for example, that the effective control of a damaging nematode—such, for instance, as this clover nematode—may be through the action of some other nematode, which in the region where this came from holds it in check there. That is thus far a theory not established in practice. But it is a line on which we are expecting to produce important dividends for agriculture if pursued persistently and thoroughly. So we know from year to year how far ahead we have gotten.

Mr. MAGEE. In your investigating work, do the States appropriate a proportionate sum for these investigations?

Dr. TAYLOR. That varies very greatly with different problems. In this particular case I do not know that any work is being done by any State except cooperative work in Idaho with respect to the clover nematode, which is a comparatively new menace to their clover production. The work that is being done in America on this group, in so far as its effect on agriculture is concerned, is being done in the Bureau of Plant Industry. Of course, related organisms, like the nematode that causes the hookworm and other human-disease producing nematodes, are handled by the Public Health Service.

Mr. MAGEE. I do not suppose you deal with the Hessian fly.

Dr. TAYLOR. That is handled by the Bureau of Entomology.

Mr. ANDERSON. You may proceed with the next item.

INVESTIGATION AND IMPROVEMENT OF TOBACCO, ETC.

Dr. TAYLOR. Item 88, page 92, is for the investigation and improvement of tobacco and the methods of tobacco production and handling. The current appropriation is \$32,000 and the increase estimated for is \$9,000, making the estimate for this year \$41,000.

Under this subappropriation our work on the growing of tobacco, the development of better methods of curing and the control of certain of the diseases affecting tobacco is carried on. The increase is

desired particularly for the provision of more adequate facilities for developing the root rot resistance strains of Broadleaf in the Pennsylvania district, the investigation of the thielavia root rot in the Connecticut River valley and the undertaking of agronomic experimentation in the new tobacco district of southern Georgia, where, substantially, during the period of the war an entire new production section of flue-cured tobacco had developed and where the merchandizing industry has gone in and established headquarters and agencies and storage houses, indicating the practical certainty of the endurance of that as a new flue-cured tobacco section, supplementing those further north. This is the southernmost area for the production of flue-cured tobacco on a commercial scale.

In this work, which as conducted, quickly gets on to a cooperative basis with the States, in some cases the State concerned carrying the major portion of the expense of it, as in the cases of Virginia and North Carolina, the aim is to develop those methods of fertilizing and crop rotation, in which the highest quality of product as well as the largest yield can be had. The tobacco crop is perhaps the most sensitive one to differences, not only of the kind of fertilizer applied but also the crops grown in rotation. The quality can be very materially improved or damaged by a wrong succession of crops. It is the one crop, perhaps, in which the particular type of legume that precedes the tobacco materially affects the quality of the crop. The result of the work, speaking in a broadly general way, may be said to be this, that in place of tobacco damaging the land, reducing the yields of the other crops which are grown on the same farms, these rotations which have been developed in the older tobacco districts have, in fact, increased the yield of the rotating crops, the cereals and the grasses and the legumes. Tobacco, instead of being necessarily a soil-depleting crop, when properly readjusted to the agriculture in which it is one element, results in an increased yield of other crops and the maintenance of fertility.

Mr. ANDERSON. What is your next item?

BREEDING AND PHYSIOLOGICAL STUDY OF ALKALI-RESISTANT AND DROUGHT-RESISTANT CROPS.

Dr. TAYLOR. The next item, No. 89, is for the breeding and physiological study of alkali-resistant and drought-resistant crops. This is a small item.

Mr. ANDERSON. There is no increase in that item?

Dr. TAYLOR. No. It is a continuation of the work which is now under way.

Mr. ANDERSON. You may proceed with your next item.

FOR SUGAR-PLANT INVESTIGATIONS, ETC.

Dr. TAYLOR. The next item is item No. 90, for sugar-plant investigations, including studies of diseases and the improvement of sugar beets and sugar-beet seed, for which the estimate is \$119,115. an increase of \$25,000. There is a slight amendment of wording which is intended to simplify and clarify it, bringing it to the substantial basis of the other crop items.

SUGAR-CANE DISEASES.

The increase of \$25,000 which is requested here is for two projects. The first and larger increase of \$20,000 is for investigating sugar-cane diseases. The principal part of this increase is needed for the enlargement of the investigation of the mosaic disease of sugar cane, which Dr. Kellerman mentioned in another connection yesterday. The disease, when it appeared in Porto Rico a few years ago did not attract particular attention for several years. Suddenly it began to show a destructive effect, resulting in the diminution of yields of cane, and spreading from field to field. An effort was made to connect it with various possible causes, such as soil character, but without success.

As a result of the investigational and experimental work here in the greenhouse it has been determined definitely to be an infectious disease carried by certain insects. However, the exact organism or virus which causes it has not yet been isolated. It gets through certain filters and does not get through others, so that it is in there between those two points. The disease caused serious damage in several of the important cane-growing countries of the world, and unfortunately it is in the continental United States to a serious extent, although its location on our mainland was not known until a year ago last summer.

What now is needed specifically in this connection, and which is unusual—I do not recall that we ever came to the committee with such a request—is the erection of a greenhouse specially built for sugar-cane disease investigation that will cost \$7,000. We ask it at this time as a piece of essential equipment needed now for the prompt follow-up of the lead that our investigators have, and we ask not only that this money be authorized but that this amount be made immediately available so that we may gain a whole growing season through putting up the greenhouse this spring instead of next fall.

Mr. ANDERSON. What is the idea of putting that greenhouse up here? Have you got to reproduce all of the normal conditions under which it is grown?

Dr. TAYLOR. One reason, which is obvious, is that it is important to have the work on a disease of this character, which involves the maintenance of the disease, outside of the commercial production area of the crop affected by it. It is comparable with citrus canker in that respect.

Mr. ANDERSON. Do you think it is not safe to conduct these experiments in the region in which sugar cane is grown, or is possible of growth?

Dr. TAYLOR. That involves certain possibilities of infection and very great psychological difficulties when an industry sees a pest house in its vicinity.

Mr. ANDERSON. Well, the infection is already there.

Dr. TAYLOR. In certain places, yes; although control work is under way. But the more important thing is this, that here in closest relation to the laboratories in which the microscopical and chemical and other technical work is done, the plants can be grown under absolutely controlled conditions. We would have to do it in a greenhouse if we were to do it in Louisiana, in order to maintain that control of the conditions that is essential.

Mr. ANDERSON. I remember five or six years ago we were urged very strongly to establish an experimental station in Louisiana somewhere for beef production, and evidently on the theory that the cane business was a dead goose. We were fooled that time; whether we are to be fooled now, I do not know.

Dr. TAYLOR. I recall that case, and that work is proceeding. Certain things have happened that probably not many of us foresaw in connection with the sugar industry of the continental United States.

The feature I would like to make clear is that this greenhouse is a big piece of apparatus required to maintain controlled conditions under which the experimental lots of sugar cane can be grown with insect carriers, a possible source of infection, under as exact control as it is possible, as well as the plants. The work requires facilities comparable with those under which much of the work in human medicine and animal pathology has to be done. With a crop of this character it is difficult, but it is possible, and we feel that to so large an extent the probabilities for prompt solution of the problem rests on this that I urge it as strongly as I know how, as a matter vitally affecting the efficiency of the work.

Mr. ANDERSON. How much is being spent now on sugar-cane diseases?

Dr. TAYLOR. \$20,000, including the control work in those portions of the South, as Georgia, Alabama, Florida, and Louisiana, where a progressive educational campaign is under way.

Mr. ANDERSON. What do you mean by control work?

Dr. TAYLOR. Control of the disease through prompt eradication of the diseased plants.

Mr. ANDERSON. You mean with respect to this particular mosaic disease?

Dr. TAYLOR. Yes; I do not mean compulsion, because that we have not the authority to do, and under conditions outside of Florida it probably is not practicable. I will say this, however, that the State of Florida, appreciating the vital importance of the permanent exclusion of this disease is exercising compulsion, and is undertaking, through its plant board, to do exactly the thing that we are doing in cooperation with them in respect to citrus canker because they feel that there is the possibility of the development of a large cane-sugar industry in Florida. So that they are taking every step necessary, they are going to extreme lengths in requiring the immediate destruction of the growing crop where found infected, and in prohibiting the replacing of cane on that land for a period of years in order to get it clean.

One very interesting and encouraging feature that has come out of the work thus far is this, that we have found in South America a type of cane which in Porto Rico is resistant to this disease. It is a very different type of cane from those grown for sugar production in the continental United States, and it is doubtful whether it will mature in our Louisiana and Texas sugar-cane climates. But we are now testing that here in the continental United States. It looks as though it would be the future basis of sugar production in Porto Rico.

Under this appropriation we brought from Argentina, two years ago, the largest shipment of seed cane that ever crossed the Equator,

so far as we know, and we have it successfully growing in Porto Rico with every indication that it will be a satisfactory yielder of sugar, though it will have to be milled in a somewhat different way, as it is a more slender cane, has a harder rind, and therefore is a little harder to handle than the common cane.

SUGAR-BEET NEMATODE WORK.

The other item is \$5,000 for sugar-beet nematode work. This organism comes back like the cat. The effort is to accomplish, through effective educational methods, first by the department and later by the inspection forces of the States, restriction of this organism to the fields where it now is. The organism can be spread through the irrigation water of the ditches that flow through the fields; it can be spread to a lower field through the runoff of a heavy rainstorm, or it can spread through the hauling of the refuse from an infected field to a feed yard from which it goes back to the beet fields again.

There has been such damage by this in certain of the irrigated beet territory that they have had to consider the closing of certain of the mills until they could get their lands clean again from the disease through crop rotation. We are undertaking to locate the infected areas promptly and effectively, and then have the sugar factory and the farmer join in control so as to hold the damage down to a minimum. Of course, the serious thing is that the sugar-beet crop, to be grown effectively, requires a heavy investment in a factory, and a factory once erected at a given place can not be moved except at a tremendous expense. The beets, to be economically and effectively handled, must, in large part, be within a short haul of the factory. So anything which involves a continuing, permanent infection of the soil becomes immediately a very serious pest.

Mr. ANDERSON. In Germany they do not haul the beets long distances—at least, ordinarily—and it seems to me there is some way that can be avoided.

Dr. TAYLOR. The hauling?

Mr. ANDERSON. Yes.

Dr. TAYLOR. In the early period of the development of the beet-sugar industry the mills were much smaller than they have become in recent years. In the devastated area in France two years ago, where the mills were so universally and maliciously destroyed, we found, in numerous cases, mills which would not have more than probably one-tenth of the capacity of the average American mill, but in every case those were the older mills. The more recent tendency has been to consolidate the working up of the beet into larger units, where a more uniform product would be the result, and where the overhead, because they have to employ expert sugar makers, will not be unduly large on the whole operation. We have the best information we can get as to what is likely in the reconstitution of the beet-sugar industry in that region, and that shows that it will be reconstituted upon a basis of much larger factory units than it was originally constructed on.

Mr. ANDERSON. How much are you spending on this now?

Dr. TAYLOR. On the nematode work, \$10,000 this year.

Mr. ANDERSON. What is your next item?

FOR INVESTIGATION, ETC., OF WILD PLANTS AND GRAZING LANDS, ETC.

Dr. TAYLOR. Item 91, for investigation, improvement, and utilization of wild plants and grazed lands, and for determining the distribution of weeds and means of their control, for which we are estimating \$32,200, an increase of \$10,000 over last year.

I think we would like to suggest a further readjustment of this language which would make it still clearer by cutting out the expression "and grazing lands," leaving the remainder as it stands in the act now, so that it would read, "For investigation in economic and systematic botany and the improvement and utilization of wild plants, and for determining the distribution of weeds and the means of their control."

WEED CONTROL.

An increase of \$10,000 in this item as a whole is estimated. Five thousand dollars of this increase is to provide in this paragraph for the weed work which is now carried on under our paragraph for forage-crop investigations.

Mr. ANDERSON. Did we not put in an item in the bill a year or two ago for investigating the control of weeds in spring-wheat areas?

Dr. TAYLOR. This is the residuum, in effect, of that item, which originally was in the appropriation for farm management, when farm management was in the Bureau of Plant Industry, and which, when farm management was separated from the Bureau of Plant Industry, was left as a clause in our forage-crop item. There is no logical reason for this being there, because the actual problems of weed control are as important in connection with other crops as with forage crops. They have become largely questions of careful study of the particular weed plants under the different environmental conditions to locate the weak spots in their life history, where they can be effectively attacked. It is essentially, to a large extent, botanical work, and we suggest its location here rather than where it has been.

Mr. BYRNES. Has there been a reduction of that item to the extent \$5,000—that is, in the forage-crop-investigation item?

Dr. TAYLOR. No; the forage-crop item has not been reduced by this amount. We suggest providing the authority for it here and the money for it here.

Mr. BYRNES. But you are keeping the money for it also in the forage-crop item?

Dr. TAYLOR. Yes; so this is in fact an increase in the total appropriation. We are suggesting that the other money stay where it is for use on forage crop problems. So that there is an increase for forage crop work.

Mr. BYRNES. If the language is put in here that amount would have to be added or else I suppose it would seriously affect the work under this particular item, in your opinion?

Dr. TAYLOR. If that money were not provided here——

Mr. BYRNES (interposing). You do not want the language?

Dr. TAYLOR. We do not need the language here.

Mr. BYRNES. You do not want the language unless you get the money?

Dr. TAYLOR. No.

Mr. BYRNES. You could not use the language unless you had the money?

Dr. TAYLOR. We could not use the language except with the money.

Mr. BYRNES. If the committee did not want to grant an increase in the other item, you would rather have the reduction of \$5,000 there and put it here and put the language here so as to straighten out the item?

ENLARGING THE BOTANICAL FIELD WORK.

Dr. TAYLOR. Yes. Then \$2,500 is needed for enlarging the botanical field work of the bureau, especially in connection with a systematic study of economic grasses.

The bureau is now doing, I think I am accurate in saying, the most important systematic grass work in the world. It has the most comprehensive collection of grasses that we have knowledge of. It is prosecuting systematic studies of the grasses of the world very effectively, and these plants mean so much to our agriculture everywhere that we wish to provide this amount more for field expenses of this work.

ENLARGING THE GENERAL SYSTEMATIC WORK IN ECONOMIC BOTANY.

The remaining \$2,500 of the \$10,000 is needed for enlarging the general systematic work in economic botany. The distinctively botanical studies of the bureau, in fact of the department, are carried on here. There has been no increase of the appropriation for this purpose during the period of increase of cost of material and equipment, and it is merely to provide for the carrying forward of this work on its present basis.

INVESTIGATION AND IMPROVEMENT OF METHODS OF CROP PRODUCTION UNDER DRY LAND CONDITIONS.

Mr. ANDERSON. What is the your next item?

Dr. TAYLOR. The next item, No. 92, is for the investigation and improvement of methods of crop production under subhumid, semiarid, or dry-land conditions, for which we are asking a total appropriation of \$169,000, which is an increase in this item of \$10,000 over the current appropriation.

The increase, with the exception of provision for one building, is needed to meet the increased costs of operation, due to higher labor costs and higher prices generally.

The one implement storage building is needed at Mandan, N. Dak., and is estimated to cost \$2,500. In order to build that it will be necessary to lift the limitation which is contained in the introductory paragraph of the Bureau of Plant Industry which restricts us to \$1,500 as the maximum cost of any farm building that can be erected. The new language recommended in the second proviso is, "*Provided further*, That the limitation in this act as to the cost of farm buildings shall not apply to this paragraph."

Mr. ANDERSON. How many of these stations have you?

Dr. KELLERMAN. Twenty-two in all, in the dry-land agriculture work. I have a list of them here.

Mr. ANDERSON. Put it in the record.

(The statement referred to is as follows:)

LIST OF FIELD STATIONS, OFFICE OF DRY-LAND AGRICULTURE.

Stations independently maintained by Office of Dry Land Agriculture.—Mandan, N. Dak.; Ardmore, S. Dak.; Tucumcari, N. Mex.; Sheridan, Wyo.; Akron, Colo.; Lawton, Okla.; Woodward, Okla.; Big Spring, Tex.; Dalhart, Tex.

State subexperiment stations at which Office of Dry Land Agriculture carries on investigations.—Dickinson, N. Dak.; Edgeley, N. Dak.; Hettinger, N. Dak.; Williston, N. Dak.; Bellefourche, S. Dak.; North Platte, Nebr.; Colby, Kans.; Garden City, Kans.; Hays, Kans.; Havre, Mont.; Moccasin, Mont.

Stations maintained by office of western irrigation agriculture and the State experiment stations at which the Office of Dry Land Agriculture carries on investigations.—Scottsbluff, Nebr.; Huntley, Mont.

In addition to the above 22 stations at which the Office of Dry Land Agriculture carries on investigations, there were two additional stations which were discontinued at the beginning of the fiscal year 1921, due to lack of funds, namely, Amarillo, Tex., and Archer, Wyo., both of which were maintained by the office of Cereal Investigations, and at which this office had representatives stationed and conducted dry-land investigations. It is understood that Amarillo has been permanently discontinued. Archer, however, is at present being maintained by the State in the hope that sufficient funds will be appropriated by Congress to enable the resumption of control over the station by the department. At four other stations, where this office has been cooperating for years, the work can be carried on by this office only until December 31, 1920, namely, Hettinger, Edgeley, Williston, and Dickinson, N. Dak. Arrangements have been made with the State authorities to temporarily take over the work for the remainder of the fiscal year from January 1, 1921, to June 30, 1921, at these stations. If this increase is allowed, it will be possible to continue the department work at these four stations. It has not yet been decided whether it will be possible to make arrangements with the State experiment station of Nebraska to carry the work at Scottsbluff from January 1 to June 30.

Mr. ANDERSON. What are you doing at Mandan now?

Dr. TAYLOR. At Mandan, in addition to the regular series of long-time crop rotation and tillage experiments, which is the backbone of this work and of the dry-land agriculture experimentation of this country, we are specializing on the horticultural crops for the northern Great Plains area, such as the vegetables and fruits which the Mandan station was primarily established to work on. You may recall that in the act under which this work was originally appropriated for, Congress covered specifically those horticultural crops. In addition to that, we have cooperative tests in shelter-belt development in the States of the northern Great Plains using those trees which have proved suited to the conditions there, which are those of dryness, cold, and frequent high winds that make living in the open country a rather difficult matter in winter.

The cooperative shelter-belt work is thoroughly organized and systematically prosecuted, our man in charge of it getting into touch with the farmer who is to undertake the planting, and directing him and later keeping track of him in an effort to encourage practically and constructively the development of these shelter belts.

Mr. ANDERSON. Are these stations created by law, or are they stations which you have established in the course of your work in dry-land agriculture?

Dr. TAYLOR. The Mandan station was specifically authorized by statute, and the land for the original station was purchased under

specific appropriation. In all other cases the lands have been either public lands withdrawn from entry or set aside for this use, or they have been lands contributed by the States or by the localities and set over under regular legal procedure, usually to the State institution with which we are cooperating.

Mr. ANDERSON. So these stations in many instances are in reality State institutions?

Dr. TAYLOR. They range all the way from stations operated practically exclusively by the department to stations operated jointly by the department and the State.

Mr. ANDERSON. Is it necessary to have 22 of these stations?

Dr. TAYLOR. I think so, for the most effective work.

Mr. BYRNES. What is the necessity of having 22 stations; the conditions are not so dissimilar as to make necessary investigations at 22 stations, are they?

Dr. TAYLOR. If you will picture that section of the country which lies between the ninety-eighth meridian and the 5,000-foot contour at the foot of the Rocky Mountains, ranging from Canada to Mexico, you will have the empire in which these stations constitute the proving places and the experimental activities of the region, both Federal and State. They are developed, as I have indicated, in large degree jointly by the department and the States, because the territory in which they are is in many cases so different from the older established agricultural sections in the eastern portions of the States.

Mr. BYRNES. But is there so much difference between the respective stations?

Dr. TAYLOR. Yes; when you take the differences in the soil and the narrow margin of water supply; that is, the rainfall which agriculture has to operate under there. It is dry farming; it is practically the whole story of dry farming from north to south, and it is a distinct, big element of our agriculture, particularly of our cereal production, including our wheat production.

I think, Mr. Chairman, in your remarks this morning you correctly indicated that the present trend is toward larger dependence on the cereals from that region in our food supply.

Mr. ANDERSON. What States do you have in mind particularly?

Dr. TAYLOR. The stations are located in North Dakota, Montana, South Dakota, Wyoming, western Nebraska, western Kansas, eastern Colorado, western Oklahoma, and Texas.

Dr. Kellerman suggests this feature, which is very pertinent, that the majority of these field stations, as we call them, are experiment farms, upon which crop work only is done. They are not general experiment stations as the State experiment stations are, covering the whole range of agricultural experimentation and research, live stock and all, but they are crop-production experiment farms, in which the questions of tillage methods, rotation practice, and all those fundamental features are attacked and at which in numerous cases other features of our work, our plant-breeding work, and in several cases the plant-breeding work of the States are carried on, thus utilizing the overhead for all that work.

Mr. ANDERSON. What are the stations that are supported entirely by Federal funds?

Dr. TAYLOR. The stations maintained entirely with department funds are Dalhart and Big Spring, Tex.; Mandan, N. Dak.; Ard-

nore, S. Dak.; Lawton and Woodward, Okla.; Akron, Colo.; Tucumcari, N. Mex.; and Sheridan, Wyo.

FOR INVESTIGATIONS IN CONNECTION WITH WESTERN IRRIGATION, ETC.

Mr. ANDERSON. You may proceed with your next item.

Dr. TAYLOR. The next item, No. 93, is for investigations in connection with western irrigation agriculture, the utilization of lands reclaimed under the reclamation act, and other areas in the arid and semiarid regions, with a total appropriation requested of \$94,420. The increase is \$42,040. That increase consists of two parts, a restoration of a cut of \$20,000 in the funds available for this fiscal year and the actual increase of the remainder, which is \$22,040.

Mr. BYRNES. In explaining this item, will you tell us what is the difference in the work you want to carry on under item 93 and that you want to carry on under item 92?

Dr. TAYLOR. Item 92 involves entirely the work in dry farming—that is, farming without irrigation. Item 93 covers entirely work under irrigation.

Mr. BYRNES. That is the difference between the two items?

Dr. TAYLOR. That is the difference between the two items. The work under item 93 is located almost entirely on Government reclamation projects, where the settlers, who are the buyers of the land from the Government, are debtors to the Government, and these projects lie, in the main, where they are isolated or separated from the proved irrigation territory of their regions. These field stations constitute, therefore, the investigating places for work on the problems of irrigation agriculture on the reclamation projects.

Mr. ANDERSON. What you are asking for is simply to restore the amount to what it was, including the \$22,000 you referred to, and you want to add to that \$22,040?

Dr. TAYLOR. We were conducting work at seven of these field stations. The reduced appropriation for this year made it necessary to spend the work at three, where it appears highly desirable to resume operations.

Mr. ANDERSON. You have discontinued your work there. What is the condition to-day? Have you men at those stations?

Dr. TAYLOR. We have maintained merely caretakers sufficient to carry the crops that were growing on June 30 during the season, setting the experimental results, and in the cases where there are collections of trees which would die if irrigation were stopped, to maintain those alive through to the present time. They are in a condition of suspended animation. We strongly recommend their resuscitation and the resumption of work at the beginning of the growing season, so that the full crop results of 1921 can be had.

Mr. ANDERSON. Suppose you have that \$20,000. You say the remainder of the increase, \$22,040, will be necessary to meet the high price of labor, travel, equipment, and materials.

Dr. TAYLOR. That is the increase of \$22,040.

Mr. ANDERSON. Do you mean you expect an increase in those items over and above the prices paid during the last year so that you need an additional appropriation of \$22,040?

Dr. TAYLOR. Yes, sir; the estimate a year ago carried a \$10,000 increase as the minimum necessary to carry that work forward even

normally. Instead of that increase there was a cut of \$20,000, which left us \$30,000 short of what was required for effective, economical operation of the work during this fiscal year. So that \$10,000 of this balance between the \$20,000 and the \$42,000 is merely the carrying forward of what was there staring us in the face a year ago when we were considering the item.

Mr. ANDERSON. I do not understand that at all.

Dr. TAYLOR. We need it.

Mr. ANDERSON. You are doing the same work as a year ago, with prices and labor and everything as high as they were then, yet you only anticipated at that time such an increase as could be made by an increased appropriation of \$10,000.

Dr. TAYLOR. \$10,000; yes, sir.

Mr. ANDERSON. Now, for the same purpose you are asking a \$20,000 increase to cover the increased cost of labor and material.

Dr. TAYLOR. Yes; over the costs as they were two years ago.

Mr. ANDERSON. If you thought \$10,000 was sufficient to cover the increase this year, then you do not need the additional increase for an increase in the cost of labor and material from July 1 of next year.

Dr. TAYLOR. I wish we could all come to realize how close we have been pinched and how difficult the men in the field have found it to merely keep things squeaking along.

Mr. ANDERSON. I suppose that has been true in the last few years; I have not a doubt about it; I do not think it is justified now.

Dr. TAYLOR. If we had had a leeway then it would have been a different situation. But this is true, that a Government dollar does not go any further than a personal dollar when it comes to paying bills, hiring labor, or maintaining the work. In the case of one of these stations, the one at Hermiston, Oreg., the State made its biennial appropriation on the basis of a half-and-half maintenance. We have not paid our half this year. The State has spent its half now. So that the continuance of the work at all into the next crop season depends upon our appropriation here.

Mr. ANDERSON. You seem to be allowing yourself a good deal of leeway under any calculation. Take your tabulated statement. You show a decrease of a little less than \$5,000 for salaries, as compared with the amount expended in 1920, and you show an increase of about \$11,000 in wages as compared with the amount expended in 1920. That is considerable; it is more than 50 per cent. You also have an increase of \$4,000 for traveling expenses; you have an increase of nearly \$4,000 for equipment and material, and you have an increase of nearly \$17,000 for miscellaneous items. I do not know what miscellaneous items are, but it seems to me that is a pretty large item.

Dr. TAYLOR. This feature also should be observed: That \$11,000 here is required to fill out the remainder of this fiscal year; \$11,000 of this increase we are asking for, as recommended in the proviso. So that this is an appropriation, in fact, for a year and a third, rather than for the fiscal year merely.

Mr. BYRNES. The idea is that you want this money given you so that you can begin operations at the beginning of the planting year?

Dr. TAYLOR. Yes, sir; we should have this available to start work as near the 1st of March as may be possible.

Mr. ANDERSON. What is your next item?

DETERMINATION OF THE ADAPTABILITY TO DIFFERENT SOILS AND CLIMATIC CONDITIONS OF PECANS AND OTHER NUTS.

Dr. TAYLOR. The next item is No. 94, "For the investigation, improvement, encouragement, and determination of the adaptability to different soils and climatic conditions of pecans, almonds, Persian walnuts, black walnuts, hickory nuts, butternuts, chestnuts, filberts, and other nuts, and for methods of growing, harvesting, packing, shipping, storing, and utilizing the same," for which we are asking \$30,000, or an increase of \$10,000. The work at present under way is specially on the pecans in the South and the almond, the walnut, and filbert in the Pacific Coast States, also the black walnut and hickory nut in the Northern and Eastern States generally.

Mr. BYRNES. What do you investigate under this item?

Dr. TAYLOR. In the case of the pecan, first, the adaptability of the varieties to the different sections of the pecan territory, as the pecan is a tree that has been introduced to cultivation only very recently. It is a new native crop. Its varieties differ very widely in their qualities, in their reaction to climatic and soil conditions, and in their value for use.

Mr. BYRNES. By their value for use, what do you mean?

Dr. TAYLOR. Such a feature, for example, as the cracking quality. The pecan industry has for several years been taking the form of utilizing the crop to a considerable extent through cracking and merchandizing the meats, instead of selling the uncracked nuts. It is developing to a basis where carload shipments of meats are not at all unusual and where in some cases the nuts go by trainloads to the storage houses of the north and there are commercially cracked and marketed in the form of nut meats throughout the East.

Mr. BYRNES. What do we hope to gain by investigation, because we know those things; we know that that is done; we know they are in trade.

Dr. TAYLOR. We do not know such a simple thing as this, why are the kernels shrunken in the case of particular varieties in particular sections—why are they shrunken and therefore without value? Is it due to a specific disease which can be located and prevented; is it due to defective nutrition, a result of shortage of water supply at a critical time, or shortage of available fertility in the soil, and if so can such defects be corrected by intercropping and cover cropping in combination with fertilizer? It is a new industry which there is no duplicate of elsewhere.

And I may say for the information of the committee that this is an item which is very urgently insisted upon by the organizations of the growers in various parts of the country that are interested in the development of the nut industry.

Mr. ANDERSON. This appropriation was urgently insisted on two years ago, so urgently that they finally got \$20,000. It seems to me they might be satisfied with what we gave them at that time.

Dr. TAYLOR. It is primarily a question of how fast we can go in the working out of the problems.

Mr. BYRNES. It will doubtless be developed into a great industry, but I was wondering what help you were going to render to them.

They grow the paper shell pecans around my part of the country and I know that they are getting a good price for them.

Dr. TAYLOR. The prices have been tremendously high during the past two or three years.

Mr. BYRNES. Where have you been making investigations?

Dr. TAYLOR. Particularly in south Georgia, in Louisiana, and in Texas. Let me tell you one incident that affects South Carolina. Perhaps the choicest dessert variety that we know of is one found wild on the Colorado River bottom in Texas where it thrives and bears regularly and produces, not a large, but a thin-shelled sweet meaty nut. It is the pecan which John Hay used to get a barrel of each year when he was Secretary of State from a grower 20 miles from a railroad station out in Texas. It was so choice that a gentleman living in Orangeburg, S. C., was impressed by it and taking it for granted that a nut which did so well in Texas would do equally well in the southeastern part of the country, and planted a number of trees of that variety. When it came into bearing the hulls were scabby and the nuts did not mature properly. It is susceptible to a fungus disease, the pecan scab, which in the more humid territory of the Atlantic coast is apparently unconquerable on a commercial scale in so far as we can yet determine.

What that planter had to do was to charge off as a loss the investment he had made up to that time, and to graft that orchard to other varieties which by the time it had been established were found adapted to that section. That is what occurs usually in the rapid development of a tree crop industry.

With our apples, our peaches, and our pears, we have the experience of centuries of growth in Europe and the older countries to fall back on, and we have a gradually accumulating experience of our own pioneers. Here we have a crop where effort is being made to bring it into full development within perhaps one generation of men. We are able to help the growers in many ways and save the waste of their money through ill-advised expenditure.

Mr. ANDERSON. What is your next item?

INVESTIGATION OF METHODS OF FRUIT GROWING.

Dr. TAYLOR. The next item is No. 95. "For the investigation and improvement of fruits, and the methods of fruit growing, harvesting, and, in cooperation with the Bureau of Markets and Crop Estimates studies of the behavior of fruits during the processes of marketing and while in commercial storage. The total amount asked for in the estimate is \$110,000, of which \$26,800 is an increase.

GRAPE INVESTIGATIONS.

The items under this estimate are, first, \$5,000 for grape investigations. This is merely to meet the higher expenses of prosecuting this kind of work. It does not involve any new features; it merely provides for carrying forward effectively the work that is now under way, which is in two principal sections, the more important one the grape-producing region of California; the less important and newer one is the development of the Muscadine type of grape, in which our work is centralized in North Carolina, in cooperation with

the State department of agriculture, which is putting more money into it each year than we.

Mr. ANDERSON. How much are you spending on these grape investigations now?

FRUIT PRODUCTION.

Dr. TAYLOR. This year the amount is \$19,000. The second item is for \$3,400 for fruit production investigations. These are general studies, especially of fruit varieties, including the small fruits, that is, the berries, in distinction from the tree fruits.

FRUIT IMPROVEMENT.

The third and largest portion of the increase is \$15,000 for fruit improvement investigations through bud selection. Until the work of the Bureau under this paragraph proved the contrary, it has been the practice of nurserymen and fruit growers generally to propagate their fruit trees by selecting buds or scions merely from trees of the same variety or name. The nurseryman growing apples selected the scions from Baldwin trees and sold those trees as Baldwins, everyone assuming that the variety was a definite and unvarying one.

Through carefully conducted experiments on citrus varieties it has been demonstrated that at least in those fruits the plant types that we call varieties and propagate by budding and grafting vary greatly in their productiveness, their quality, and in other important respects. It has been demonstrated as the result of carefully conducted tree performance records carried on for a series of years in particular orchards, so that the exact yield and quality of each tree in the planting is known, that certain trees are drones, comparable with the boarder cow. Certain other trees are consistent producers of good crops of fruit of desirable quality. This superior productiveness is capable of transmission in large degree through careful selection of the buds for propagation. The discovery marked perhaps the longest step forward in the improvement of our tree crops that has been taken in recent years. While the whole story is not yet worked out, it has been so convincing that the cooperative organization of citrus-fruit growers of California has taken over the dissemination and distribution of the wood from these proved choice trees at a fair price to every one who is desirous of getting that material, so that that feature of the work is fairly well protected. The same principles appear to apply to the deciduous fruits, which have been so satisfactorily established with the citrus fruits, although if you were to put this question to many experienced fruit growers and to many commercial nurserymen and to a good many horticultural experts they would question the accuracy of what I have said.

We have reached the point where enough has been done in the field of deciduous fruits to make it clear that it is worth while to carry such work forward systematically and vigorously in that field. It is a type of work which the individual fruit grower can not do for himself, and which the fruit growing organizations can not do effectively. It is one of the most important increases I think that we are submitting in the estimate for this year.

And the principle that has been determined here is not restricted merely to the trees, but is applicable to other perennial crops. The Hawaiian sugar growers, for example, have taken the cue and are carrying forward an extensive, systematic investigation of their crop now on their own account at their experiment station in Hawaii. It is a type of work for which even five years ago we would not have recommended an increased expenditure but on which we are now at a point where we are so confident of prompt and large returns through the replacement of nonproductive with good producing strains that we feel it should go ahead.

Mr. ANDERSON. How much is being spent on this work now?

Dr. TAYLOR. At this time I have not the figures segregated here, but it is about \$10,000.

FRUIT UTILIZATION.

The next part of this item is \$3,400 for fruit utilization investigations. This is a project involving a study principally here in the laboratories and at Arlington farm in a roughly constructed laboratory where we are working on methods of utilization through production of special products, such as the unfermented juices, the jellies, and those things, and the determination of the special adaptability of the leading fruit varieties to those particular uses.

Mr. ANDERSON. Does that not properly belong in the Domestic Science Division?

Dr. TAYLOR. They are not undertaking this basic type of work. They are undertaking the household work.

Mr. ANDERSON. Making jelly is a household performance.

Dr. TAYLOR. The Volstead Act, however, has changed the fruit utilization prospect very materially in many fields.

Mr. BYRNES. How?

Dr. TAYLOR. Through the presumable prevention of the use, ultimately, of apples and grapes and other fruits for the production of alcoholic beverages.

Mr. BYRNES. We know it has resulted in increasing the use of grapes in making wine for home consumption; as a general thing, that is the way it has worked out.

Dr. TAYLOR. Yes; in a way.

Mr. MAGEE. So it has not changed it.

Dr. TAYLOR. The present situation is practically that an abnormal demand has developed which must be regarded as merely temporary in so far as extensive commercial production is concerned.

Mr. MAGEE. Do you want an appropriation to enforce the Volstead Act?

Dr. TAYLOR. We do feel it is important to know what varieties are particularly suited for the production of unfermented juice products and other new fruit products.

Mr. MAGEE. All these fruit juices are unfermented?

Dr. TAYLOR. Yes, sir.

Mr. MAGEE. Do you mean that your idea is you can find some fruit, the juice from which would not ferment?

Dr. TAYLOR. No; I mean there is a very great difference in the quality of unfermented juice that comes out of different varieties of fruits, even of winter apples, and the question of the future of our

orcharding is going to depend not merely on what we can get for the fruit we sell in boxes or barrels, the fancy fruit, but also for the lower grades of fruit that can be converted into a desirable product that the people will pay money for.

Mr. MAGEE. Do you mean a fermented product?

Dr. TAYLOR. No, sir; unfermented products. There is no alcohol in this item whatever. This whole fruit utilization industry is in a state of uncertainty, and the fruit growers are in a state of uncertainty as to where they are coming out, and we have some constructive experimental work under way which we feel will be helpful in the problem.

FOR CARE OF GARDENS AND GROUNDS, CONSTRUCTION OF WALKS, ROADWAYS, ETC., WASHINGTON, D. C.

Mr. ANDERSON. What is your next item?

Dr. TAYLOR. The next item is item No. 96, "To cultivate and care for the gardens and grounds of the Department of Agriculture in the city of Washington, including the upkeep and lighting of the grounds, and the construction, surfacing, and repairing of roadways and walks, and to erect, manage, and maintain conservatories, greenhouses, and plant and fruit propagating houses on the grounds of the Department of Agriculture in the city of Washington," for which we are asking \$20,205 for 1922. That is an increase of \$8,515, and that provides for the resurfacing of 2,620 square yards of asphalt roads in the department grounds.

Mr. BYRNES. Where do you propose to do this resurfacing?

Dr. TAYLOR. It is the resurfacing of the Thirteenth Street approach from B Street to the main building, which divides in front of the main building and goes around each way.

Mr. ANDERSON. Is that the extent of it?

Dr. TAYLOR. And also the cross drives that connect with that in front of the main building, including the space in front of the main building. It is old worn-out asphalt, laid some 20 years ago, which we have patched and carried along as far as we feel is practicable to undertake.

Mr. ANDERSON. What is your next item?

FOR HORTICULTURAL INVESTIGATIONS, INCLUDING STUDY OF TRUCK AND RELATED CROPS.

Dr. TAYLOR. The next is item 97, "For horticultural investigations, including the study of producing and harvesting truck and related crops, including potatoes, and in cooperation with the Bureau of Markets and Crop Estimates, studies of the behavior of vegetables while in the processes of marketing and in commercial storage, and the study of landscape and vegetable gardening, floriculture, and related subjects," for which we are asking \$101,940, an increase of \$30,000 over the amount appropriated last year.

STUDY OF VEGETABLE STORAGE.

Under this item our vegetable growing work and certain studies of the behavior of vegetables in the processes of marketing and commercial storage are carried on. Of the \$30,000 increase, \$10,000 is

for continuing studies of the reactions of vegetables to storage, mostly cold storage, but in some cases warm storage, to get at a more rational basis for the whole scheme of vegetable storage to permit of more effective distribution of these crops. This is a field in which the Bureau of Plant Industry does the technical, biological, and pathological studies. The Bureau of Markets takes care of the commercial application and the transportation features. We have a well constructed, fairly adequate experimental plant at Arlington farm, so we are in a position to do the work economically and effectively, but we have not adequate funds with which to operate.

Mr. ANDERSON. How much are you spending?

FOR IRISH POTATO INVESTIGATION.

Dr. TAYLOR. We are spending \$4,000 this year on the vegetable storage work. The second part of this item is \$5,000 for Irish potato investigations. These include the potato-breeding work of the department. That work is largely in cooperation with the Maine experiment station, the Colorado experiment station, and the Idaho experiment station, the work at which place is supplemented by work in a number of the other State experiment stations, including New Jersey, Virginia, Wisconsin, Minnesota, Iowa, Washington, California, Louisiana, Texas, Oklahoma, Arkansas, and Florida. The potato is our most important vegetable crop and one which is peculiarly susceptible to improvement through breeding and by the use of better cultural methods. To properly carry on the investigations additional technically trained assistants should be employed and provision made for their traveling and other expenses.

Mr. ANDERSON. How much are you spending for this item now?

Dr. TAYLOR. On the potato work we are spending a total at present of \$27,500. We are asking for an increase of \$5,000.

FOR VEGETABLE UTILIZATION INVESTIGATIONS.

The next item is \$5,000 for vegetable utilization investigations. This work is in many respects similar to the fruit utilization work except that in this case the primary consideration is with regard to the problems of drying and canning. Most of this work is done at Arlington farm with the equipment we now have there.

Mr. ANDERSON. It does not seem to me, speaking generally, very practicable, as most people have to dry what they can get.

Dr. TAYLOR. That is true, but there is not infrequently the possibility of choosing between a first-class variety and an indifferent one for these purposes, and in the commercial production of these products—in the case of canning there are large developments and the growers are growing them especially for canning.

Mr. ANDERSON. Now, what fruits do you have in mind and what vegetables in determining the utilization of it?

Dr. TAYLOR. Potatoes, sweet potatoes in particular, are the large important ones and here also as a vegetable for canning, sweet corn which is—

Mr. ANDERSON (interposing). Have you any suggestions from the canners that they do not know what the best varieties are?

Dr. TAYLOR. Yes; we have frequent inquiries from the commercial canners with respect to just exactly that thing. There has not been enough thorough experimentation to determine what varieties are best adapted for the canning industry, and it is very important to work this out.

Mr. ANDERSON. All right; what is your present expenditure?

Dr. TAYLOR. The present expenditure is \$3,500 and as I say, we have the equipment, we have the men; that is the reason we would like to make their work fully effective.

FOR BULB-CULTURE INVESTIGATIONS.

Item (b) is \$10,000 for bulb-culture investigations, in which there is experimental investigations in progress especially in the Pacific Northwest centered at our Bellingham field station, at Bellingham, Wash.

The money is needed for two special phases of the work, better equipment at Bellingham, and the undertaking of similar work with the other types of bulbs which it is believed can be successfully grown in the eastern United States, presumably somewhere on the Atlantic seaboard.

A very encouraging indication of what can be expected from this work has come from the work with the Easter lily, by growing the bulbs from seed instead of from bulb scales as is the commercial practice in Japan and Bermuda and other foreign countries where we get our commercial supply.

We are producing a pathologically clean lot of bulbs, throwing beautiful flower stalks and sufficiently uniform in their blooming time to meet the requirements of the commercial florists.

Through all of this work, the central idea is to develop home production, particularly of those things which in the past have been carriers into this country of pests from the older countries and thus protect of agriculture in the future.

Mr. ANDERSON. How much does this stand us up?

Dr. TAYLOR. That item, I find, is included here in our general flower culture work. I shall have to submit an estimate there, Mr. Chairman. If you would like I will submit a detailed parallel in the case of all of these; \$7,500 is now being expended for bulb cultural investigations.

Mr. ANDERSON. I think it would be helpful to the committee in coming to these items if they knew what the present expenditure was.

Dr. TAYLOR. So that you will have one complete parallel.

Mr. HARRISON. Would you want that throughout the estimates, Mr. Chairman; that is, in case of items for which we have asked increases, would you like to have a statement as to what the present expenditure is?

Mr. ANDERSON. I think that would be valuable to the committee.

Mr. HARRISON. We will be glad to get that for you.

Dr. TAYLOR. We will be very glad to do that.

Mr. HARRISON. Would you want that to go into the hearings, Mr. Chairman, or just for your own information?

Mr. ANDERSON. I think if we have it for the information of the committee that that is all that will be needed.

FOR INVESTIGATING THE METHODS OF PROPAGATING FRUIT TREES, ETC., IN
COOPERATION WITH STATES AND PRIVATE NURSERIES.

Dr. TAYLOR. The next item is item No. 98, for the investigation in cooperation with States or privately owned nurseries, methods of propagating fruit trees, ornamental and other plants, the study of stocks used in propagating such plants, and methods of growing stocks, for the purpose of providing American sources of stocks, cuttings, or other propagating materials.

The initial appropriation for this work was that of the current year, which is \$20,000. We estimate \$10,000 additional as necessary for the work. This is to the nursery industry what the bulb work is to the florist industry. We are necessarily quarantining against the importation of much heretofore imported propagating stock. We need to develop in this country our own sources of supplies.

We estimated a year ago that it would require \$30,000, and our experience so far this year clearly demonstrates that that amount is necessary. The nurserymen are urging us to undertake this work on a larger scale. I had a letter yesterday from the secretary of the American Association of Nurserymen urging that the department undertake at least double the scale of work that these estimates carry.

I told him that while we felt we could perhaps use that much effectively, we believed that this amount would be sufficient for the coming year to develop the work, and we strongly urge this \$10,000 increase.

Mr. ANDERSON. Of course, there isn't much limit to the amount of work you could do of this character, I suppose. The thing to be avoided is the possibility of the nurserymen preceding us, or you doing the things that they ought to do themselves?

Dr. TAYLOR. Yes; and to avoid the mistake of acting too hurriedly in the development of an industry that might have to be undone, in other words the importance of undertaking it in an orderly fashion, proceeding from what we know into what we do not know. We believe that conservative enlargement is the soundest course at this time.

ARLINGTON, VA., FARM AND AGRICULTURAL STATION.

FOR NECESSARY IMPROVEMENTS, MAINTENANCE, ETC.

Item 99, on page 105, is the maintenance appropriation for the Arlington farm, for which we estimate an increase of \$9,500 to meet the increased cost of labor, equipment, supplies, fuel, repairs to machinery, and for certain additional incidental facilities for the development of the experiment work.

The work at Arlington farm has increased rapidly as the department work has developed. The appropriations for Arlington farm have not been enlarged recently, if I remember correctly.

Mr. ANDERSON. It was increased \$6,000 in 1918.

Dr. TAYLOR. It was increased \$6,000 that year.

Mr. ANDERSON. In 1918?

Dr. TAYLOR. The department, particularly the Bureau of Plant Industry, is undertaking to do at Arlington farm just as much of its

work as can be effectively done there, because it is near to the department. It does not involve travel expense. The work is under the direction and the eye of the men in the department, and the effort is made to do the work in a practical farm way without expenditure on ornamentation or superfluous features. In some respects we would be justified, probably, in expending more money on appearances there, but we are not doing that.

FOR INVESTIGATIONS IN FOREIGN SEED AND PLANT INTRODUCTION.

Item No. 100, on page 106, is for investigations in foreign seed and plant introduction, including the study, collection, purchase, testing, propagation, and distribution of rare and valuable seeds, bulbs, trees, shrubs, vines, cuttings, and plants from foreign countries and from our possessions, and for experiments with reference to their introduction into this country.

The total here is \$173,000 an increase of \$81,100 for the following purposes:

Twelve thousand six hundred and sixty dollars for the Chico, California, plant introduction field station. You may recollect that Congress in 1918 authorized the purchase at Chico of 130 acres adjacent to the original site which was made available to the department without cost a number of years ago.

We have the land and have done such preparation of it and have made such use of it as has been practicable with the funds available. We need now to develop that land for intensive and effective use.

Mr. ANDERSON. What are you doing at these plant-introduction stations?

Dr. TAYLOR. We bring together there the plant material which is coming in from foreign countries through our agricultural explorers and through our very wide correspondence with plant workers in practically all of the countries of the world. Those correspondents in some cases are official investigators of similar problems in their own countries.

In many cases they are missionaries who have gone from this country into such regions as China, India, and Africa who have the plant instinct and interest, and exchange with us plant material which to them appears promising for us to test.

We bring the plants to these gardens, make sure that the material is entomologically and pathologically clean; give it the initial test, propagate it sufficiently for placing it in the hands of individual experimenters, who are interested in the particular type of plant, and the State experiment stations to give as broad and as economical a try out of the new material as is possible. This represents probably the closest approach to the work which the Department of Agriculture was originally created to do that is now under way. It is systematically, thoroughly, and carefully carried on. Just as soon as one of these crops shows promise of commercial importance the public is informed through publication and through sufficient distribution of seed or cuttings to get the crop started and we have the beginning of a new industry.

The work done at these plant-introduction field stations is carried on without financial assistance from the States in which the field stations happen to be located.

NUMBER OF PLANT STATIONS.

Mr. ANDERSON. How many of these plant-introduction stations have you now? There are three mentioned here.

Dr. TAYLOR. Five. Chico, Calif., the recently established plant-detention station at Bell, Md., land for which——

Mr. MAGEE (interposing). The land for that was purchased a year ago?

Dr. TAYLOR. Yes; the plant detention station is a quarantine station where imported plants that are under suspicion can be held for a sufficient time to make sure that they are not infected?

Mr. MAGEE. You take them into custody?

Dr. TAYLOR. Yes; they are in custody until they are found to be clean. They are in custody from the moment they reach our ports until they are released—it may be three months, six months, or maybe a couple of years.

Mr. HARRISON. It is the Ellis Island for plants, Mr. Magee?

Dr. TAYLOR. It is the Ellis Island for plant immigrants.

For the work at Bell, we estimate \$18,500 to complete the equipment, and——

Mr. ANDERSON (interposing). What did that station cost; I do not remember?

Mr. HARRISON. It was \$10,000 for the land—\$50,000 altogether, was it not, Doctor?

Dr. TAYLOR. I think so.

Mr. HARRISON. It was \$10,000 for the purchase of the land.

Dr. TAYLOR. The Bell station is in operation. The greenhouses are, I suppose, now under heat. We have had a very difficult period in which to build because of the advancing costs that continued practically throughout the whole contracting period, but the station is now under way.

Buena Vista, Fla.——

Mr. ANDERSON (interposing). What is this \$18,500 for. Just maintenance and operation of that station?

Dr. TAYLOR. That is chiefly for labor, fuel, electric power, some construction work, the purchase of farm implements and horses for this plant.

Mr. ANDERSON. This station is scarcely in operation?

Dr. TAYLOR. No.

Mr. ANDERSON. Just coming into operation now?

Dr. TAYLOR. The fires in the greenhouses, I suppose, have been started within the last few days since I was out there the last time; but this Bell station is the place through which even the commercial importations of plant material that are admitted through the plant quarantine come and are cleaned on their way to the importers.

Mr. ANDERSON. That is what I had in mind, that this station was originally estimated for in the first place.

Dr. TAYLOR. It was, Mr. Chairman.

Mr. ANDERSON. I thought that this was Dr. Marlatt's proposition.

Mr. HARRISON. It was made necessary, as you know, by quarantine 37, and which was made necessary on account of that quarantine.

Mr. ANDERSON. This proposition was necessary in order to cooperate with the quarantine work?

Mr. HARRISON. It was a necessary adjunct to the order, Mr. Anderson.

Mr. ANDERSON. I was pretty certain that no authorization for the construction of the building of this plant had been authorized under the Bureau of Plant Industry.

Mr. HARRISON. The Bureau of Plant Industry has to do this work, but it is a necessary adjunct to the plant quarantine.

Dr. TAYLOR. This will be much clearer, much better, if in the line (b) the word "introduction" is made "plant-detention field station."

Mr. ANDERSON. I understand this now, all right. I did not understand that this came in under the Bureau of Plant Industry, and I did not understand it in connection with the word "introduction."

Mr. HARRISON. That is really an error.

Dr. TAYLOR. Item (c) calls for an increase of \$12,940 for the Buena Vista, Fla., plant-introduction station.

This is the one place in the United States where the introduction of tropical plants is handled and where it is really possible to handle that type of vegetation. The plants brought in there and tested are often more important to the island possessions—that is, to Porto Rico and Hawaii and to the Philippines—than to the continental United States.

Mr. ANDERSON. You own this land at Buena Vista?

Dr. TAYLOR. That land is being deeded to the department under the authority for its acceptance which Congress gave in the last Agricultural act.

Item (d) is for \$10,000 for the Bellingham, Wash., plant-introduction field station. The station and the land at Bellingham is in the same status as the previous item. This is a dual-purpose station primarily for plant introduction, through which we utilize the one overhead equipment and supervision for plant-introduction work there and the bulb-development work.

Mr. ANDERSON. I note that it is stated here that it is also planned to carry on at this station extensive experiments to determine the possibility and practicability of the commercial production of nursery stocks.

Now, what is the difference between that work that you intend to carry on there and the work under item No. 98?

Dr. TAYLOR. The idea of this paragraph at Bellingham is to make clear that the facilities and equipment of this field station are to be used for the nursery stock work. Under the other place——

Mr. ANDERSON (interposing). Under 98?

Dr. TAYLOR. This \$10,000 is not to be used for nursery stock work.

Mr. ANDERSON. But the work which is paid for under 98 does not include this station for which \$10,000 is asked?

Dr. TAYLOR. No. But the \$10,000 is largely for the completion of the equipment of the field station, as we are working under very cramped conditions there as regards buildings, implements, etc.

Item (e) provides \$5,000 for the Savannah, Ga., plant-introduction field station, which is a small station made available to the department by gift, under statutory authority, where the primary crop at this time is bamboo. It is the most recently established of the plant-introduction stations.

How important bamboo may become in our economy is not yet clear. We import, as one item, something like \$2,000,000 worth of bamboo canes for fishing poles.

Mr. ANDERSON. Is there any attempt to develop the bamboo commercially, grow it commercially?

Dr. TAYLOR. There is some effort, but as yet it is a very incidental desultory effort. There probably will need to be considerable testing of the various types of bamboo before commercial planting will be justified, except perhaps in southern Louisiana, where there are some plantings of commercial size already contemplated. The McIlhennys, of Averys Island, have perhaps now growing the largest assortment of bamboos of any individual.

Mr. BYRNES. Is there much bamboo around Savannah?

Dr. TAYLOR. No; except on this particular piece of land, where, some years ago, an introduction was made through a sailor, as I recall it, who became interested in the plant and brought it in and turned it over to some friend. It has taken hold there, and it has thrived, and has indicated a very promising adaptability to the conditions.

The last paragraph under this item (f) is a recommendation for a Central Asian agricultural exploration. The estimate is for \$22,000. This proposal is to ascertain what plants there would be useful to the agriculture of our colder, dryer, and more elevated western territory.

Mr. ANDERSON. Do you know the kind of plants—are they cereal plants?

Dr. TAYLOR. Cereals and grasses, more particularly; and it has a more important bearing on the improvement of the western ranges than upon the betterment of our tilled-crop agriculture. The plants that are now aggressive, the plants that are taking the ranges in much of the drier territory, are Asian plants that have come in at various times. The region of Central Asia is agriculturally an unknown quantity to the western world, and the possibility of securing useful and important plant material there appears excellent.

The plan would involve the sending of a small expedition, which would need to be there at least a year, and might possibly need to remain for a longer period. It would be necessary to send more than one man as a matter of safety and to insure the carrying through of the project.

It is the one foreign exploration which appears to us of the largest immediate potential importance to our western agriculture.

Mr. ANDERSON. Is there anything in the present situation to induce you to suggest that at this time?

Dr. TAYLOR. No exigency.

Mr. ANDERSON. So far as I know this is the first thing of this sort that has appeared in the bill, and I was wondering just why it was proposed now.

Dr. TAYLOR. The principal reason for proposing it now is the fact that the whole question of our range development and utilization is in the public mind. This is sure to have important bearing on the future development and use of those range lands.

If it would be a help to you, Mr. Chairman, I would be glad to submit a memorandum in detail outlining and giving an explanation on this feature, as it is unusual. It is unlike any other feature of the estimates.

Mr. ANDERSON. I think probably the committee has it sufficiently in mind, so that it probably will not need any additional statement. We can ask for it if we do.

INVESTIGATION AND IMPROVEMENT OF GRASSES, ALFALFA, CLOVER, ETC.

Dr. TAYLOR. Item No. 101, on page 108, is a paragraph which we recommend be divided into two paragraphs, which are set out in items 102 and 103. This provides for two radically different activities heretofore carried as one paragraph.

The first of these is set out in 102, for the investigation and improvement of grasses, alfalfa, clover, and other forage crops, \$101,400.

Mr. ANDERSON. Here is where that eradication of weeds proposition comes in. I knew it was in here somewhere.

PASTURE INVESTIGATION.

Dr. TAYLOR. Yes; this is where weed eradication is in the current appropriation act.

The amount appropriated for the foliage-crop work this year is \$73,400. So that there is an apparent increase of \$28,000 here; but the transfer of the weed-investigation item of \$5,000 in the estimates to the economic and systematic botany subappropriation makes the actual increase for forage-crop work \$33,000. This increase is recommended for two important features of work. The first of these is \$15,000 for pasture investigations. The pasture is perhaps the most neglected basic portion of our agriculture in America to-day. At its best the pasture provides the best feed and the most substantial basis of our live-stock industry, but very little has been done in the form of thorough systematic investigation with regard to the improvement of pastures in this country.

The bureau is working in a small way on such investigations in cooperation with the Mississippi and Cornell experiment stations.

Mr. ANDERSON. How much are you expending?

Dr. TAYLOR. I shall have to secure that for you.

Mr. ANDERSON. You might put a statement in the record as to that, also.

Dr. TAYLOR. Also with the Virginia experiment station.

Mr. ANDERSON. Just let me ask there why these two places were selected?

Dr. TAYLOR. These three?

Mr. ANDERSON. Yes.

Dr. TAYLOR. The work in Virginia was selected primarily with reference to securing an opportunity for a continued experimental observation of limestone-pasture conditions in which blue grass was the basic grass crop. It is in the western portion of old Virginia.

Mr. ANDERSON. Is there considerable area of that limestone formation that this would be applicable to?

Dr. TAYLOR. Yes, sir; Virginia, portions of West Virginia, Tennessee, and Kentucky. In all of those States it is important.

In New York the work has been selected with reference to the central New York hill farm conditions where tillage is difficult,

where the live-stock industry must be based on grazing rather than tillage fundamentally and also because of the fact that at the Cornell Station they were interested in that class of work and were in shape to cooperate with us.

In Mississippi the proposition is a very different one, for it is primarily the determination of how to develop economic, efficient pasture in cut-over pine lands to a large extent.

Mr. ANDERSON. Does that bear any relation to live-stock development in the South?

Dr. TAYLOR. Yes, sir; it is basic to the whole problem of cattle and sheep development in the South, where the cut-over land problem is perhaps the largest factor in development of a live-stock industry.

Mr. ANDERSON. This is probably off of the question, but—I know practically nothing about that country—is there a settling up of these cut-over lands or were they originally settled up?

Dr. TAYLOR. There has been a settlement and abandonment and re-settlement in places. There has been a sort of infiltrating settlement in other places where an occasional hardy pioneer with his family would start out and undertake to hew out a farm for crop production in the cut-over lands remote from a developed agricultural community.

The big problem now is to know which part of these lands is worth clearing up for farming and cultivating and which part should be devoted primarily to the reproduction of forests in part, and to permanent grazing use in part.

Mr. BYRNES. Well, as a matter of fact little progress has been made toward doing anything with those cut-over lands?

Dr. TAYLOR. Not very much; there is so large an area.

Mr. BYRNES. In most of those lands it means drainage before they can be settled and cultivated.

Dr. TAYLOR. Yes; in some sections.

RED CLOVER INVESTIGATIONS.

The second portion of this increase is needed for red-clover investigations, \$18,000. I hope the committee appreciates that red clover is the cornerstone of the approved crop rotations of the Northern and Middle Western States. It is really the crop that our modern agriculture has relied on to maintain soil fertility. There has been a disturbing decline in the behavior of red clover which is clearly apparent when you study the acreage of this crop in the latest available census figures.

Mr. ANDERSON. You mean decline in the character of the clover, or decline in acreage?

Dr. TAYLOR. Both; but in the census figures the decline is in acreage. We take it to be chiefly a reflection of the decline in the yield and endurance of clover.

For example, on this little map [indicating] the northeastern United States is divided into five districts on a basis of the comparative census figures of 1899 and 1909. Briefly stated, New York, Pennsylvania, and New Jersey, which in 1899 had 454,473 acres of

ver, in 1909 had 158,532 acres, practically a decline of two-thirds the clover acreage during those 10 years. It did not—

Mr. MAGEE. It would not grow?

Dr. TAYLOR. That it would not grow satisfactorily is one reason.

Mr. MAGEE. Insects or something destroys its growth?

Dr. TAYLOR. The insect feature has been worked pretty thoroughly. There are certain diseases that trouble, but they are not sufficient account for it.

District No. 3, comprising Maryland, Virginia, West Virginia, and Kentucky, in 1899 had 381,287 acres and in 1909 dropped to 124,436 acres. District No. 4, comprising Indiana, Illinois, Wisconsin, and Michigan, had dropped from 2,185,259 acres in 1899 to 68,404 acres in 1909.

Mr. ANDERSON. You have not got the last census figures?

Dr. TAYLOR. We have not the last census figures, but aside from certain localized betterment, we expect that the figures will show a continued trend in the same direction. District 5, which comprises Minnesota, Iowa, and Missouri, in 1899 had 600,717 acres and in 1909, 445,731. The drop there was not as severe as in the old Middle West and in the New York-Pennsylvania-New Jersey district.

Mr. MAGEE. Well, has not alsike and alfalfa taken its place?

Dr. TAYLOR. This includes alsike. The alfalfa acreage has not increased sufficiently to nearly replace the clover acreage that has gone.

Mr. ANDERSON. Of course, alfalfa can not take the place of clover in most sections.

Mr. MAGEE. They can not produce it. It seems to have run out.

Dr. TAYLOR. That is what we call it, generally, and this decline has occurred simultaneously with enlarged importations of red clover seed from southern Europe, particularly from Italy, which we know from such work as has been done is less hardy as regards cold and is more susceptible to certain bacterial diseases than clover from seed grown in Michigan, Minnesota, or the Dakotas. The big question is: What is the matter with the clover crop and how can we bring it back to its place in our agriculture?

Mr. ANDERSON. Have you examined the price of clover seed in connection with that decline?

Dr. TAYLOR. With this decline?

Mr. ANDERSON. Yes.

Dr. TAYLOR. The price of seed has fluctuated greatly. In general, the price of all crop seeds, barring the present collapse, which is not economic but is economic, the price has rather steadily risen, because the yields of seed have rather steadily declined.

In southeastern Michigan, where in my earlier experience yields of 4 to 5 bushels of clover seed were frequent per acre, a bushel and a half now is a pretty good crop.

Mr. ANDERSON. For some reason or other the production of clover seed seems to be very, very insignificant.

Dr. TAYLOR. It is.

Mr. ANDERSON. And clover is, from purely a monetary standpoint, imagine, a rather unprofitable crop unless you can at the same time produce seed.

Mr. MAGEE. Well, to use it for seed purposes, and I think probably other kinds of clover are better even than it for seed crops.

Dr. TAYLOR. Alsike clover is coming into larger use especially on soils a little too acid for red clover, and a little too wet.

Mr. MAGEE. You could not feed clover to horses.

Dr. TAYLOR. Not: not as hay.

Mr. ANDERSON. Is it not likely that clover has gone out of production to some extent due to the increased use of ensilage?

Dr. TAYLOR. It has not been as necessary to rely on clover in the dairy regions since the production of ensilage was developed, but we do not get in the ensilage the nitrogenous element that we must have for a balanced ration, so that we feed ensilage and perhaps buy alfalfa or cottonseed meal or some other sort of feed.

Mr. MAGEE. Is it your idea to increase the growing of red clover purely for fertilizing purposes?

Dr. TAYLOR. Both as forage and for soil improvement.

Mr. MAGEE. Well, you can not profitably grow it for feeding purposes.

Dr. TAYLOR. If we can determine why clover has collapsed, and cure the cause of that collapse——

Mr. MAGEE. I think it is plain that it has collapsed to a very large degree because other kinds of grass were found more suitable for feeding purposes.

Dr. TAYLOR. Barring alfalfa, the feeder would hardly agree with you. Of course, to the extent that alfalfa can be grown it is superior to clover, but as a crop which fits into the rotation of the humid northern and eastern portions of the country, alfalfa can hardly be considered.

Mr. MAGEE. What do you give clover to for food?

Dr. TAYLOR. Cattle, sheep, and hogs, and to horses as a temporary pasture.

Mr. MAGEE. Do you think that it would prove to be beneficial for that purpose?

Dr. TAYLOR. No; not as a feed for horses. It is used as a feed for cows, and as a grazing feed for horses.

Mr. MAGEE. This clover unless it is cured right and handled right is terribly dusty and flies to pieces and is the worst stuff to handle of anything I know of.

Dr. TAYLOR. It is not a horse hay.

Mr. MAGEE. No, not in any sense; and I think that there are a number of grasses more preferable for feeding purposes. I think that is one reason why it has not been grown so much, at least in my State. Then, it seems to have sort of run out, too.

Dr. TAYLOR. That is what we call it. In some cases——

Mr. MAGEE (interposing). I have raised a good deal of it.

Dr. TAYLOR. The soil is not suited to the raising of clover in some sections, but we do not believe that the last word has been said nor that clover should be allowed to run out of our agriculture to the extent that it appears to be going.

PURCHASE, PROPAGATION, TESTING, AND DISTRIBUTION OF NEW AND RARE SEED.

Item 103 on page 109 is for the purchase, propagation, testing, and distribution of new and rare seed, \$56,600.

That is the second part of the former paragraph for which these two paragraphs are submitted. It is the same amount spent this

year for this purpose and is to be used for the distribution of new and rare seeds of farm crops, chiefly forage crops, as distinguished from the vegetables and flowers.

Mr. HARRISON. The next item has been discussed.

Dr. TAYLOR. Item 104 has been discussed.

TO DETERMINE THE PURITY, VIABILITY, ETC., OF VEGETABLE SEEDS BOUGHT
IN THE OPEN MARKET.

Item 105, on page 110, is a new item which proposes "to enable the Secretary of Agriculture to determine the purity, viability, and the trueness to variety of vegetable seeds secured in the open market, and when such seeds are found to be adulterated or misbranded according to standards established by the Secretary of Agriculture the results of the tests shall be published together with the names of the persons by whom the seeds were offered for sale, \$25,000."

Mr. ANDERSON. Of course, that is a legislative item, Dr. Taylor, and is subject to a point of order.

Mr. BYRNES. This is the same principle as the pure food act.

Dr. TAYLOR. No; it is different in this particular—

Mr. BYRNES. Because you are going to publish the names of the dealers instead of making it a misdemeanor. That is the object, though.

Dr. TAYLOR. It does not contemplate prosecution. It proposes systematic investigation and testing, and in case of adulteration or misbranding it proposes publication as the remedy. This proposes to do for vegetable seeds substantially what has for some years been done under paragraph 85 on page 89 for seeds of grasses, clover, alfalfa, etc., and where very beneficial results have followed.

Under the earlier paragraph we purchase, test, and in case adulteration or misbranding is found the names of the firms that sell adulterated or misbranded forage-crop seeds are published. The work has resulted in very material improvement of the quality of our field-crop seeds.

Now, under this new item the recommendation contemplates going further than we now go with the field-crop seeds; that is, the determining of the trueness to variety of the seeds.

The paragraph is the net result of an extended consideration of what is the most promising practical step to improve the seed situation regarding which there is much dissatisfaction among farmers and among the reputable seed men.

Various proposals for Federal legislation have been submitted from time to time and considered. This line of investigation and publication appears to be the surest way of accomplishing betterment in that field. Let me illustrate the importance of it with regard to such a crop as peas for canning, out of the experience of the season just ended. Some 25 to 30 per cent of the acreage of peas planted in the State of Maryland this year for canning were worthless for that purpose and had to be used for hay or plowed under or be disposed of as pig feed after they were canned because of untrueness to variety.

One canner told me within the last week that his expenditure of \$20,000 for seed peas which was intended to produce a pack of 75,000

cases of canned peas brought in a net result of some 20,000 cases of very indifferent discolored canned peas.

The seed sold was untrue to name. It was unsuited for the purpose and the loss to the canners and to the farmers who grew the peas was very heavy. Some sort of continuing correction of this very difficult matter has been urged upon the department both by the canning industry and by the seed trade, and the plan outlined in this paragraph is, we feel, the most promising.

Mr. ANDERSON. If this is developed heavily, it will run into very large amounts of money.

Dr. TAYLOR. Not necessarily, Mr. Chairman.

Mr. ANDERSON. Probably.

Dr. TAYLOR. No; I think not. It has not in the case of the field-crop seed work and I do not expect that it would in this case. It would need to be continued for a number of years and it would need to be carried along without intermission to be materially helpful.

Mr. ANDERSON. Could this be conducted somewhat on the line of certification as the Bureau of Markets does in the case of fruits and vegetables put on a similar basis?

Dr. TAYLOR. That general plan has been discussed and it is a constructive idea. The difficulty is this. We think if any plan of certification should be adopted it certainly would be necessary also to locate and make known to the public any concerns which were either deliberately or through criminal carelessness furnishing to the public spurious seeds.

Mr. ANDERSON. All right. There is no change under the general administrative item?

Dr. TAYLOR. No change in that item. The estimates do not include any provision for the purchase and distribution of valuable seeds, commonly known as the congressional seed distribution.

Mr. ANDERSON. That then can be considered and discussed on the floor without going into it here.

Mr. MAGEE. That is a good thing.

STUDYING AND TESTING COMMERCIAL SEEDS.

Dr. TAYLOR. There does remain, however, this item 85 on page 89 which we passed over temporarily which is our seed laboratory activity under which our field seed testing and publication work is carried on and also the enforcement of the seed importation act.

PURCHASES OF COMMERCIAL FIELD SEED FOR TESTING.

In this item we ask for an increase of \$20,700, \$5,000 of which is needed for purchases of commercial field seed for testing. These tests are based on actual commercial purchases so that the evidence which the department has before it for publication is complete.

Mr. ANDERSON. Well, I notice you are basing this on higher prices of seeds. On that theory we ought to cut it about three-quarters.

Dr. TAYLOR. This figure was determined in September before the recent collapse of the field seed market occurred. If the present basis of prices continue we will not need it. If the market recovers we will.

Mr. ANDERSON. Well, we can not guess as to that.

EXTENDING ADULTERATED SEED INVESTIGATION.

Dr. TAYLOR. The second feature, \$12,000 for extending the viability and purity work to vegetable seeds as provided for in item 105. These features of that work would be done in the seed laboratory. This would be the indoor work of that project.

ENFORCEMENT OF THE SEED IMPORTATION ACT.

Item (c) is \$3,700 for enforcement of the seed importation act, to provide for the establishing and maintaining of a representative of the bureau at the port of New York, where the majority of our imports of field seeds come in.

The sampling is done by the custom officers with only occasional visits from our people. We should be in closer touch with that than we are, and this \$3,700 is necessary for that purpose.

That, I think, completes the Bureau of Plant Industry, Mr. Chairman, unless you desire to ask some questions.

Mr. ANDERSON. Unless some member of the committee desires to ask some questions.

We are very much obliged to you, Dr. Taylor, and to you, Dr. Kellerman.

FOREST SERVICE.

MONDAY, DECEMBER 27, 1920.

STATEMENTS OF COL. W. B. GREELEY, FORESTER IN CHIEF; MR. E. A. SHERMAN, ASSOCIATE FORESTER; MR. ROY HEADLEY, ASSISTANT FORESTER IN CHARGE OF OPERATIONS; MR. E. H. CLAPP, ASSISTANT FORESTER IN CHARGE OF RESEARCH; MR. W. C. BARNES, ASSISTANT FORESTER IN CHARGE OF GRAZING; MR. E. E. CARTER, ASSISTANT FORESTER IN CHARGE OF FOREST MANAGEMENT; AND MR. A. H. SMITH, ASSISTANT FORESTER IN CHARGE OF PUBLIC RELATIONS.

GENERAL STATEMENT.

Mr. GREELEY. If agreeable to you, Mr. Anderson, I would like to make a general statement regarding the business and work of the Forest Service, as a preliminary to the consideration of the individual items.

The work of the Forest Service is primarily the administration and development of public property. We are secondarily a research organization. Our biggest job is the administration of the national forests, and I feel in coming before your committee in the position of a manager of a business enterprise coming before his board of directors and asking them not only to fix the budget for another year's business but also to indicate the policy which the directors wish to have followed, because the two go together. Our primary job is the administration of the national forests, which represent a property value of something over \$1,000,000,000. We have a net

area of 156,000,000 acres. We have a net stand of timber of 549,000,000,000 feet.

Mr. ANDERSON. What do you mean by net stand?

Mr. GREELEY. The net stand of timber on Government lands alone, eliminating the intermingled private lands. This represents about one-fourth of all the timber remaining in the country. We have a land value of about 439,000,000, very conservatively estimated. We have a timber value of 575,000,000, very conservatively estimated, or a total of \$1,014,000,000, which represents a conservative appraisal of the value of the property that the Forest Service is responsible for.

Now, that is our starting point in approaching this question of the annual estimates, and I would like to suggest it to the committee as its starting point. I have put on this chart a few facts to bring out the development of the business of the Forest Service during the past 10 years, beginning with the fiscal year 1911 and ending with the fiscal year 1920. During that 10-year period our appropriations have increased 16½ per cent. Our receipts have increased 142 per cent, from nearly \$2,000,000 to a little under \$4,800,000.

RECEIPTS FROM SALE OF TIMBER, GRAZING, FEES, ETC.

Mr. ANDERSON. If it will not interrupt you, will you at this point divide the receipts, unless you are going to do that later, so we will know what proportion of these receipts are from timber sales, what proportion from grazing fees, etc.

Mr. GREELEY. I will be glad to do that now, sir. This \$4,793,000 of total receipts splits as follows: From sales of timber, \$2,044,600; from leases of grazing rights on the national forests, \$2,486,000, those being the two big items; from rentals for the use of land, including water power, \$239,923; and from trespasses and miscellaneous small items, \$22,919. Now, during the same period while our appropriations have increased 16½ per cent and the receipts have increased 142 per cent, we have been able to increase the total personnel, including both year-long employees and our summer force of guards and scalers, a total of only 18.6 per cent. Our permanent personnel, represented by year-long employees under the civil service, has actually dropped off very slightly, a little over 1 per cent. In other words, with the pressure of the growing volume of business and fire hazard we have had to throw such increases as we got in appropriations altogether into temporary personnel, primarily to take care of fire protection.

This graph shows the progress of timber sales and the amount of timber cut during the same 10-year period. The yearly cut of timber has increased 115 per cent, from 374,000,000 feet in 1911 to 806,000,000 feet during the past fiscal year. The number of timber sales; that is, of individual transactions, during the same period increased from a little over 5,600 to something over 13,000 individual transactions.

Mr. ANDERSON. Does that include sales of timber to settlers?

Mr. GREELEY. Yes, sir; that includes all timber sales.

Mr. ANDERSON. What proportion of those sales represent sales to settlers?

Mr. GREELEY. It is approximately 42 per cent.

Mr. ANDERSON. In number?

Mr. GREELEY. In number, and about 3 per cent in volume, representing sales to settlers and farmers at cost.

INCREASE IN GRAZING.

The graph here shows the increase in the volume of grazing use of the national forests. There has been a small increase in the number of stock grazed and an increase of 46½ per cent in the number of people who use the national forest ranges; that is, our number of grazing permits has jumped in the 10 years from 25,604 to 37,500, an increase of 46½ per cent in the number of grazing permittees or of individual transactions which are necessary in taking care of the grazing business.

STOCK.

Mr. ANDERSON. I think you did not give the figures on the number of stock.

Mr. GREELEY. The total number of stock of all classes increased from 8,897,000 to 9,445,000.

Mr. ANDERSON. That would indicate an increasingly smaller herd; that is to say, in point of number of animals per permit.

Mr. GREELEY. Yes, sir; the average number of animals per permit is dropping steadily from year to year, which means that the use of the national forest ranges is being progressively split up amongst a larger number of people.

Mr. ANDERSON. That would be in line of sound policy, would it not?

Mr. GREELEY. We have felt so, sir; particularly as that policy encourages the development of agricultural lands. There are still a good many areas in the vicinity of the national forests which are capable of agricultural development in connection with a live-stock business. The land in those high mountain valleys often is suitable only for growing forage for winter feed, and in combination with summer pasturage in the national forests, an agricultural enterprise is possible which would not be possible if the national forest ranges were unavailable.

The development of business on the national forests during the last 10 fiscal years, which I have briefly summarized, is set forth in the following tables:

Receipts and appropriations for administration of Forest Service (statutory salaries and general expenses excluding emergency fire fighting and improvements).

[Fiscal years 1911-1920.]

Year.	Net receipts.	Regular appropriation, exclusive of fire and improvements.	Year.	Net receipts.	Regular appropriation, exclusive of fire and improvements.
1911.....	\$1,963,963.42	\$1,523,100	1916.....	\$2,823,510.71	\$5,003,256
1912.....	2,104,256.91	4,873,100	1917.....	3,457,078.91	4,999,735
1913.....	2,391,929.85	4,723,015	1918.....	3,574,939.07	5,112,375
1914.....	2,437,710.21	4,841,679	1919.....	4,353,414.16	5,131,555
1915.....	2,481,462.35	4,908,256	1920.....	4,793,462.28	5,366,869

Personnel of the Forest Service.

[Fiscal years 1911-1920.]

Year.	Permanent, temporary, and furloughed.	Perma- nent only.	Year.	Permanent, temporary, and furloughed.	Perma- nent only.
1911.....	3,366	2,791	1916.....	3,682	2,723
1912.....	3,678	2,759	1917.....	3,544	2,645
1913.....	3,791	2,625	1918.....	3,631	2,577
1914.....	4,003	2,736	1919.....	3,436	2,740
1915.....	3,875	2,764	1920.....	4,029	2,691

Number of timber sales and amount of timber cut on the national forests.

[Fiscal years 1911-1920.]

Year.	Number of sales.	Amount (M feet b. m.).	Year.	Number of sales.	Amount (M feet b. m.).
1911.....	5,653	374,678	1916.....	¹ 10,840	595,022
1912.....	5,772	431,492	1917.....	¹ 11,607	727,539
1913.....	¹ 6,182	495,668	1918.....	¹ 13,037	728,833
1914.....	¹ 8,298	626,306	1919.....	¹ 12,592	704,769
1915.....	¹ 10,905	565,754	1920.....	¹ 13,272	805,509

¹ Includes settlers' sales authorized by act of Aug. 10, 1912.*Grazing permits issued and number of stock grazed on the national forests.*

[Fiscal years 1911-1920.]

Year.	Number of per- mits.	Number of stock grazed.	Year.	Number of per- mits.	Number of stock grazed.
1911.....	25,604	8,876,353	1916.....	33,328	9,747,108
1912.....	26,501	9,054,707	1917.....	36,638	9,690,357
1913.....	27,466	9,421,959	1918.....	39,118	10,755,589
1914.....	28,945	1,239,033	1919.....	39,152	10,229,895
1915.....	30,610	9,010,731	1920.....	37,479	9,456,975

During the 10-year period from 1911 to 1920 all transactions involving the use of the national forests increased 30½ per cent. This includes grazing leases, sales of timber, land uses, permits of all sorts, representing the number of business transactions which our organization is required to handle. During this same 10-year period, as far as rough estimates can be relied upon, the number of people using the national forests for recreation purposes and for business purposes combined has increased over 200 per cent. A rough estimate made up for the last year shows something over 6,000,000 people who were on the national forests for one purpose or another, the bulk of them for recreation. This is a very important problem to us, because the increasing number of people who use or visit the national forests for one purpose or another represents an increased fire hazard which must be provided for in our organization. The actual number of fires which are started every year show an increase of 100 per cent as compared with 10 years ago; and unless our protective organization can keep pace with that increased hazard, resulting from the much freer use of the national forests, it is not going to

be possible to protect our timberlands effectively. The increasing number of people who use the forests is a matter of very real concern to us, primarily because it represents a correspondingly greater fire hazard.

EXPENDITURES AND RECEIPTS.

Our expenditures in 1920 aggregated \$5,966,000 under the regular appropriations and \$2,950,000 under a deficiency appropriation, which was made necessary by the emergency expenditures required a year ago last summer to take care of the extraordinary forest-fire situation. Of the regular appropriations of \$5,966,000, all but \$540,000 went into the protection, administration, and development of the national forests. This will give you an idea of the relative division of our work between administration and protection on the one hand and research on the other. The \$540,000 went into research work, including forest products, range investigations, and our experiment stations and other forest studies, many of which, as a matter of fact, have a direct bearing upon the handling of national forests; but the great bulk of the appropriation goes into the protection and administration of public property.

The receipts last year of \$4,793,000 exceeded by \$78,000 the cost of protecting and administering the national forests including all overhead expenses, but leaving out the emergency expenditures for fire fighting, and leaving out also such costs as tree planting, buildings, and other structures and development items; I have separated, in my analysis of the estimates, our work into three broad classes, the administration of the national forests, taking care of the property as it now stands, which is the biggest item of all; secondly, the development of that property through improvements like the construction of buildings, telephone lines, roads, and trails, and tree plant; and thirdly, the research work, which is in part connected with those other two items and in part not.

As between the fiscal years 1919 and 1920, our receipts increased \$435,000, an advance of about 10 per cent. Under reasonably stable industrial conditions I anticipate that the revenues from the national forests should continue to increase at about that rate. If you draw a straight line on the curve between 1911 and 1920, you will find that an increase of between 10 and 15 per cent has been maintained. It is probable that the present industrial depression will decrease our receipts proportionately at least during the next fiscal year, because a good many of the mills operating on national-forest timber are closing down like the mills in the lumber trade generally, but under normal conditions we can expect the national-forest income to increase around \$500,000 a year, representing the normal development of the use of these forests as the country around them becomes settled, and as many of the forest industries move westward on account of the shortage of timber in the eastern States.

Now, aside from these cash revenues of close to \$5,000,000, there are other very important economic returns which are obtained through the expenditures on the national forests. I would like to enumerate these, because they are facts which should be borne in mind in considering this proposition from a purely business standpoint as to what Congress and the country is getting for the money

which is expended. In the first place, we are protecting one-fourth of the timber left in the United States from fire and from other causes of destruction. We are now cutting less than one five-hundredths of our merchantable timber on the national forests each year. The balance represents a reserve supply, an enormous reserve supply, one of the largest reserves which the country has anywhere, and the protection of that reserve supply of timber from fire and from destructive insects—and we have an item on that this year—is an economic service of the very first importance.

Next to that we are protecting about 20,000,000 acres of young forest. The national forests contain approximately that area of land that was burned over in years gone by, some of it cut in trespass and some of it cut under our methods of making sales, which is restocked with young timber. The protection of this 20,000,000 acres, which is the largest single holding of young forest in the country, is a very important factor; but it costs money to do it, and we can not show any income from it for a great many years until the timber on these 20,000,000 acres reaches cutting size.

In the third place, we are protecting enormous areas of watersheds which have high value for the protection of stream flow. This ranges from areas like the Bull Run watershed, which supplies the city of Portland, and the Cottonwood watershed, which supplies the city of Salt Lake, to watersheds like those in southern California, which represent a very high and specialized value for irrigation, and like many of the watersheds in Colorado, in Arizona, and in practically all the Western States on which irrigation reservoirs and systems depend for their supply of water. It costs us in the aggregate a good many thousands of dollars a year to protect these watersheds, and we can not show any return from it in dollars and cents to the Federal Treasury; but it is an important economic service that must be considered in weighing the cost and income from the national forest enterprise.

Our direct economic service to local communities and settlers in the form of free timber, timber sales at cost to settlers and farmers and free grazing for milk and work animals should also be considered. Then there is, as a fifth item, the very large service which is being rendered to the general public in the many forms of recreation which the national forests afford. These range from the facilities provided for the hunter and fisherman who likes to go off by himself to the camp grounds in the vicinity of large cities which are thronged with people, many of them fresh-air camps or community camps, camps along the transcontinental highways which are used by tourists, groups of summer homes under permits, etc. The demand for this sort of use of the national forests is increasing enormously and it does represent something which the country gets for its money. I raise this point here because I would like to have the committee bear it in mind in its consideration of the question of receipts. The Forest Service has been criticized because the income from the national forests has not increased more rapidly. I would like to say in answer to that general criticism that it is not wise to attempt to force our resources upon the markets more rapidly than the industries develop in the national forest regions to use them; but, as a matter of fact, we now have more business than

can handle. One of the questions which I want to ask the committee consider is the problem of taking care of the increased business that very rapidly coming to us and which we ought to be in a position accept. But aside from the income in dollars and cents, there are these very large economic returns which can not be put in dollars and cents, but which, nevertheless, are very real.

ESTIMATE FOR 1922.

Now, in making up our appropriation estimates for the new fiscal year, I would like to give you a brief summary of the estimates as a whole.

We have asked for a total under the regular Forest Service items, adding the items which appear in the miscellaneous portion of the bill, of \$8,587,936. That represents an increase over the corresponding items during the fiscal year 1921 of \$2,417,114. The greater part of the increase applies on the items requested for the administration and protection of the national forests. Those items total \$6,968,336, or nearly \$7,000,000, out of the total of \$8,500,000 requested. These items for the administration and protection of the national forests include our statutory roll and our item for general expenses on national forests, under which are paid our expenses for travel, fire equipment, and the employment of personnel not provided for in the statutory roll, including temporary guards, scalers, and other helpers during the busy season. It includes the item of general administration and the item for fire emergencies, the latter heretofore appearing under the miscellaneous portion of the bill, but which we have asked to have inserted with the other national forest items because it is distinctively a national forest expenditure. It includes also the item for equipment and supplies and a new item which we are requesting of \$25,000 for combating timber-destroying insects, which are often a dangerous source of destruction. Those are the items which apply directly on the administration and protection of the national forests, nearly \$7,000,000 out of the \$8,500,000 total which we have requested.

The next group of items aggregate \$932,640, which are asked for to carry on the improvement and development of the national forests. The first group simply contemplates the administration and protection of this public property as it now stands, and the second group to carry forward such improvement and development work as Congress sees fit to authorize.

Mr. ANDERSON. Will you be a little more specific as to what you mean by improvement and development work? Do you include in it, for instance, the construction of roads and trails, telephone lines, tree planting, and reforestation?

Mr. GREELEY. Yes, sir; I will give the items which make up the improvement and development fund. The largest is for the construction of permanent improvement, trails, telephone lines, bridges, buildings, lookout stations, fire towers, and that sort of thing.

Mr. ANDERSON. Does it include fences?

Mr. GREELEY. Yes, sir; drift fences and other range improvements. That amounts to \$500,000 out of the \$932,000 for development and improvement, tree planting—

Mr. ANDERSON (interposing). What is the increase for that particular item?

Mr. GREELEY. The increase for permanent improvements is \$100,000. We ask for \$500,000 as compared with \$400,000 appropriated for this year.

The planting of denuded land in the national forests is the second development project in size, for which we are asking \$170,640, or an increase of \$50,000 over the present year.

The third item of importance is surveys of resources, for which we are asking \$125,000, an increase of \$45,000 over the present year. That is the item under which our timberlands are surveyed and appraised, and our national-forest pastures are surveyed to determine the carrying capacity and the best means of development. This survey of resources is development work, because it looks forward to new business and increased use.

Our next development item is the classification of lands, \$87,000. There is no increase over the present appropriation. That is the item under which we are completing the classification and segregation of agricultural lands, and also making surveys of homesteads in order that they may be brought to patent. Further, under authority from Congress, we are making field examinations in connection with land exchanges. That all looks to the development of the national forests as a property.

The last item under the development group is a new one of \$50,000 for the development of recreational facilities. I will explain that in detail as we come to the item in the bill. In line with the other proposed developments, this appropriation is recommended in order to increase the usefulness of the national forests by increasing their resources for general recreation.

The third group of items are those for research work. The largest of them is our item for investigation in forest products, of \$400,000, an increase of \$176,000 over the present year.

The second in size is the item for silvicultural investigations, under which our forest experimental stations are maintained; we are asking this year \$155,000, an increase of \$105,000 over 1921.

The next item is for range investigations, \$70,000, an increase of \$35,000 over this year.

We are also asking for a new item this year of \$25,000 in order to carry, on a larger scale than we have been able hitherto, the study of farm wood lots and the development and encouragement of forestry by farmers in the various phases of windbreaks, shelter belts, care of wood lots, and the marketing of wood-lot products.

My purpose in presenting this grouping of the various items is to show how the work of the Forest Service balances as between its major activities—\$6,988,000 to administer and protect the national forests as they now stand, \$932,000 to improve and develop the national forests, and \$686,000 for research work, partly connected with our national forest activities and partly for the general promotion of forestry and timber conservation throughout the country.

During 7 of the past 11 fiscal years it has been necessary for the Forest Service to request deficiency appropriations for emergency expenditures in extinguishing forest fires. During the fiscal 1920 this deficiency amounted to \$2,950,000, which is the largest we have

ever had. During the past 11 years the deficiency appropriations, which we have had to come to Congress for, have averaged \$592,000 per year; that is, the average of the 11 years. There were certain years when we had to make no deficiency requests, but these were only 4 out of the 11.

Mr. ANDERSON. May I interrupt you just a moment?

Mr. GREELEY. Yes, sir; certainly.

Mr. ANDERSON. I presume that these graphs and statements which you are making are based upon tabulations of actual figures and percentages?

Mr. GREELEY. Yes, sir.

Mr. ANDERSON. We can not put the graphs in the record without permission from the Committee on Printing and we could not do it in any event without a great deal of delay. It might be helpful to the committee if you would put into the record in connection with your statement the tabulations upon which these graphs are based and upon which your general statement is based.

Mr. GREELEY. Yes, sir.

This large deficiency item of nearly \$600,000 per year on the average results from the fact that our organization on the national forests is not adequate to cope with the fire hazard.

Mr. ANDERSON. You do not object to my interrupting you?

Mr. GREELEY. Certainly not.

INCREASE IN FIRE HAZARD.

Mr. ANDERSON. Is there anything that indicates in a graphic way what the increase in the fire hazard is, if there is or has been one in the last 10 or 11 years?

Mr. GREELEY. The best indication of that, sir, is the increasing number of fires. We have a record going back to 1909 of the number of fires that have gotten started every year. In 1909 there were 3,138 fires. For the next three years it averaged about that number—about 3,000 fires a year. In 1917 it was 7,814; in 1918, 5,573; and in 1919, 6,800. The number of fires started each year varies, of course, with the climatic conditions, particularly the length of the dry season, but taking the average of good and bad years 10 years ago and now the figures show unmistakably that we have twice the fire hazard to contend with that we had a decade ago, as shown by the number of fires that get started.

Mr. BYRNES. What is the explanation? As the appropriation increases why should the fire hazard increase?

Mr. GREELEY. The explanation is the increasing number of people, the campers, tourists, and automobilists; the increased settlement in some places, the increased logging operations not only on Government land, but on private land mixed in with the Government land—in general, the increased travel and use of the forests, as compared to 10 years ago.

Mr. BYRNES. That is true. What is the estimated cost of extinguishing fires, as compared with 10 years ago. Have your men become more efficient and are they able to extinguish the fires at less cost?

Mr. GREELEY. If we could hold our efficient men that would be true, but, as I will set forth with a great deal of stress in the course

of the hearing, one of the greatest difficulties bearing right on this very problem is the loss of our experienced men.

Mr. MAGEE. On the theory that you had not nearly as many fires in 1919 as in 1917?

Mr. GREELEY. There were about 1,000 more in 1917 than in 1918. The fiscal year 1917 was one of unusual climatic conditions and any one year by itself is apt to throw you off, because of the——

Mr. MAGEE (interposing). It does not throw me off at all. Your argument is that these men do not get enough wages, and so you have to increase their pay. Your inference to the committee that the increase in fires was due to the loss of experienced men is all "bunk."

Mr. GREELEY. No, sir; the increase in the number of fires.

Mr. MAGEE. The figures show that you had many more fires in 1917 than since?

Mr. GREELEY. Yes, sir. That fiscal year is the highest year we have had to date, but there can not be any question as to the increased number of fires, taking it year by year, at present, as compared with 10 years ago.

Mr. MAGEE. That may be true. I do not know how it will impress the other members of the subcommittee, but we sit here day in and day out and the main answer we get as to why the estimates are enlarged is that they must compete with the wages paid by outside corporations. Everybody who has a grain of common sense knows that the Government can not do that. The Government would be bankrupt in no time; we could not do that. It may be necessary to have a reclassification of salaries and to do away with inequalities, and that probably will be done, but the main argument all the while is that "if we do not get enough money we can not hold the men." My answer to that is if they do not get enough to stay in the Government service let them get out.

Mr. GREELEY. Well, sir, my desire is simply to place the actual facts before the subcommittee.

Mr. MAGEE. Yes, sir. But the number of fires does not sustain the argument you made. The inference you intended to convey to the committee was that because your men did not get salaries enough they were leaving, and consequently for that reason the number of fires was increasing, while the fact is that you had a great many more fires in 1917 than you have had since.

Mr. GREELEY. The facts are these: If you take the average of the good and bad seasons 10 years ago and the average of the good and bad season now, we have about double the number of fires started as formerly.

Mr. MAGEE. Double the number you had 10 years ago?

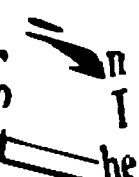
Mr. GREELEY. Yes, sir.

Mr. MAGEE. That is true.

Mr. GREELEY. The reason that a larger number of fires gets started is because we have a good many more people in the forests.

Mr. MAGEE. That is apparent.

Mr. GREELEY. Now, then, if you can catch the fire when it is small and put it out, the damage is negligible.

Mr. MAGEE. When I was in the Northwest, a year ago last fall, the different national parks and reservations that I went into was told that the airplane would be very effective in lessening 

number of fires. I do not know how that is working out, but they put a great deal of stress on it.

Mr. BYRNES. Is not this question not so much the number of fires as the ability of your men to extinguish the fires with little damage?

Mr. GREELEY. That is it.

Mr. BYRNES. I wanted to hear what you had to say about that.

Mr. GREELEY. I cited the number of fires as indicating the increase in hazard, in reply to Mr. Anderson's question.

Mr. ANDERSON. In other words, is there any difference in dealing with these fires between experienced men and inexperienced men?

Mr. GREELEY. The question is one of catching the fires when they are small, of having the fire-fighting tools in the right place, telephone lines in order, and an experienced organization that can meet the situation promptly and efficiently—it is a matter of good organization, and there is where we have felt the loss of our experienced men.

Mr. MAGEE. In the fighting of fires you have to depend largely on the settlers or residents in the locality where the fire breaks out?

Mr. GREELEY. Only to a small degree. We get a lot of help from them, that is true, but we have to depend mainly upon the forest rangers and guards.

Mr. MAGEE. But you could not have employees enough to put out all of these fires?

Mr. GREELEY. We have to have enough employees to form a permanent organization for patrol and detection and furnish a skeleton organization for fire fighting.

Mr. MAGEE. Certainly.

Mr. GREELEY. All over the national forests.

Mr. MAGEE. But the physical work is largely done by the people who live in the locality where the fire occurs?

Mr. GREELEY. No; not largely. The main work is done by the forest rangers and guards and by the temporary help that we have to employ when we get a fire on our hands that is too big for the regular force to handle.

Mr. MAGEE. They do the work under your direction?

Mr. GREELEY. Yes, sir; we do get a great deal of help from them.

Mr. MAGEE. And your rangers and guards direct the operations; is that right?

Mr. GREELEY. Yes, sir. Any successful fire organization must catch most of its fires when one man can put them out. That is the type of organization we are working for all the time. During the season of 1920 this was done on a good many national forests. That work was all done by our guards and rangers.

Mr. MAGEE. I appreciate that.

Mr. GREELEY. When a fire gets beyond the ability of the rangers and guards to handle it, then we have to go out and get help.

Mr. MAGEE. When a fire gets well under way you can not do anything. I saw a whole building destroyed in a few hours out there.

Mr. GREELEY. You will agree that success in fire prevention lies in jumping on the fire when it is small.

Mr. MAGEE. There is no question about that.

Mr. GREELEY. For that you have to have an organization of competent men on the ground whose business it is to do that very thing. That is where this matter of experience comes in.

I was not going to raise the question of salaries at this point, but we lost last year 330 experienced rangers because of inadequate compensation. We had to fill those positions with the best men that we could get, many of them green and inexperienced.

Mr. MAGEE. You will not have probably as much difficulty this year as you had last year?

Mr. GREELEY. I certainly hope not.

Mr. MAGEE. Because this abnormal condition was created during the war and we have got to get back to normal. It seems to me that it is about time that all men in the different departments of the Government appreciated that fact. I may be in error, but that is my notion about it.

Mr. GREELEY. As I was saying, the Forest Service has been compelled to ask on the average \$592,868 a year as a deficiency appropriation. One of the purposes of the increased appropriations which we are asking for this year is to eliminate the necessity, as far as that is possible, of coming to Congress for these deficiency appropriations. That is a matter which I should like to have the committee consider in connection with the increases which we are asking for. One of their definite objects is to do away with emergency fire expenditures and to do away with the necessity of coming before Congress with a large deficiency estimate. If with the increase which we have asked for we are able to eliminate deficiency appropriations, the net drain upon the Treasury will be greatly reduced.

The total expenditures on the national forests during the fiscal year 1921 will amount to 34 mills per acre. Out of this 10 mills represent the cost of fire protection, and 24 mills represent the cost of handling the current business, timber sales, grazing, land uses in all forms, etc., together with the construction of improvements and the planting of denuded lands. The increases which we are asking for would bring our expenditure in 1922 up to 47 mills per acre as compared with 34 mills per acre this year. They would bring the expenditure for fire protection alone up to 14 mills per acre as compared with 10 mills per acre this year. In comparison with these expenditures the 1920 receipts amounted to 26 mills per acre. That is, we are getting 26 mills per acre and have spent this last year 34 mills per acre, including all improvement and development work.

Why are the increases which we have asked for required? I appreciate that I have made some large increases in the estimates submitted by the Forest Service. I have done so because the administration of this business requires it. I can not do anything less than put the exact situation of the business before this committee and submit just what the business needs. That has been my standpoint in approaching the whole proposition. What does this business enterprise—because it is a business enterprise—call for?

Our increases are needed, in the first place, to take care of the increased fire hazard which I have already discussed. I want to add this idea to what I have already said: The protection which the Forest Service proposes under its estimates amounts to four-tenths of 1 per cent of the value of the merchantable timber alone within the national forests, to say nothing of the value of the areas of young forest growth which we are protecting and the watershed values which we are also protecting. In other words, we have a national

property in standing timber that is worth \$575,000,000, on which we propose to spend four-tenths of 1 per cent of its value for fire insurance. The expenditure for protection proposed by these estimates will amount to a little less than 1½ cents per acre on the average of all the national forests.

I should like to call your attention to the requirements which are being placed by a number of Western States on the owners of private timber land for protection from forest fires. For example, in Oregon and Washington State laws require the owner of every tract of timber land in excess of one-quarter section to protect his land adequately during the dry season, not only the standing timber, but the cut-off land. Those same State laws provide that if the owner of the timber does not protect it adequately himself the State will do it and the cost will become a lien upon the property.

The maximum expenditure for which the landowner can thus be made responsible is 5 cents an acre. There are several associations of timberland owners now in existence which spend from 8 to 5 cents per acre yearly for the protection of their property from fire. As compared with authorized State expenditures in Oregon and Washington of 5 cents per acre, and with private expenditures in many cases exceeding 10 or 12 cents per acre. I think the committee will see that an average expenditure in the national forests of 1½ cents per acre is very moderate. As a matter of fact, the Government lands are not now protected as well as private lands in several portions of the West, particularly in western Montana, northern Idaho, Oregon, and Washington, where private associations of timberland owners have gone into forest protection on an efficient basis. We now are not holding up our end in protecting the forest lands of those regions.

Another essential of better protection is the elimination of emergency expenditures as far as possible. Our situation up to the present time has just been this: We have not had enough rangers and guards to form an adequate protective organization. It is just like a large city that has not a fire department of sufficient size; a city under those conditions gambles on its fire hazard, and we are gambling in the national forests on the climate. If we get an exceptionally favorable season, as we occasionally do, our protective force can put out nearly all the fires started and we have no serious losses; but in an average season, and still more in a season dryer than the average, or with an exceptional number of lightning storms, the fire situation gets out of the control of our guards and rangers, just as in a city with an inadequate fire department fires get out of control and they have to call upon neighboring cities and increase their force of men and equipment while the fires are burning.

That is our situation to-day in the average season. Our rangers and guards are not enough to keep the fires under control and get them out before they attain large proportions. Then we have to go out and employ temporary labor; large crews of men, sometimes aggregating 200 or 250, have to be assembled; they have to be equipped with tools; food has to be provided, and the whole thing has to be done under tremendous pressure for time in order to get at the fire as quickly as possible. Expenditures under those conditions, gentlemen, simply can not be made economically as a business propo-

sition, and our emergency fire expenditures, when we get into this situation of big fires, are necessarily uneconomical. As business men we ought not to continue a situation which makes such expenditures unavoidable. When we get these big fires on our hands they not only threaten the Government's property but they threaten human life and they threaten villages and towns, and it is simply up to the Forest Service to jump into the breach and handle the situation as best it can. But to the extent that we can reduce these emergency expenditures by being able to employ more rangers and guards and have a better and more widely distributed fire organization on the spot before the big fires get started, we are going to buy a great deal more protection for the money expended. I am extremely anxious, whatever else you may be able to do, that we get our protective system on a basis where this emergency proposition, which is extravagant and uneconomical, can be cut out.

Aside from the greater fire hazard, we need increased appropriations to carry our growing volume of business. While appropriations during the past 10 years have increased but 16 $\frac{2}{3}$ per cent, the use of the national forests in every particular has increased far beyond that ratio. As compared with the preceding fiscal year the cut of timber in 1920 increased 14 per cent and the amount of timber sold increased 66 per cent. That is in addition to the increases I spoke of in my opening statement. This increase in timber sales of 66 per cent represents approved contracts or obligations which the Government has undertaken and which must be discharged. We have got to furnish the men to mark and scale this timber and supervise its cutting in order to carry out these timber sale contracts which have been entered into, because they are business obligations which have been assumed.

Furthermore, the depletion of forest regions in the East is taking the forest industries generally westward. I want to give you a figure or two on this because it is a question of general policy that affects the handling of the national forests and you gentlemen should understand the situation exactly. Careful estimates have been made which show that within the next 10 years the cut of lumber in the Eastern States will drop off about 11,000,000,000 board feet a year. That means, except as other materials may be substituted for lumber, that 11,000,000,000 feet a year must be cut in the Western States and shipped eastward over and above what those States are furnishing now. We are feeling the effects of that general situation in the national forests to-day.

In addition to the timber which has been sold we have pending applications for the purchase of saw timber in the Western States which aggregate about 3,000,000,000 board feet. That represents, roughly, \$7,000,000 worth of prospective business, most of which can be taken on if we have the men to do so. Aside from that \$7,000,000 worth of prospective business in the Western States there are proposed pulp and paper developments in Alaska which aggregate about 3,000,000,000 feet more of pulp wood. Those applications represent from two and a half to three million dollars more of prospective business that the Forest Service can take on in the next one or two years if we are in a position to do so.

TIMBER IN ALASKA.

I would like to say, in amplification of my statement regarding Alaska, that 100,000,000 feet of national forest stumpage has already been purchased and the contract closed. The first pulp mill in Alaska is now being built and will be manufacturing pulp probably by next July. There are to-day four large interests which we know of that have had engineers in Alaska considering particular locations for manufacturing sites and particular tracts of timber, and all of them are preparing to follow the matter up vigorously next summer, with a view to locating pulp and paper plants in Alaska. This Alaskan development is a matter of special importance for the Government to encourage, because it not only means more business in the national forests and a larger revenue, but it also is, in my judgment, an effective way to take care of the national paper shortage, particularly newsprint shortage.

Mr. MAGEE. Is the timber which you have mentioned as being in Alaska on Government reservations?

Mr. GREELEY. Yes.

Mr. MAGEE. There is spruce enough rotting and going to waste in the forests of Washington and Oregon to supply all the newsprint paper for all the newspapers in the United States for a good many years to come.

Mr. GREELEY. There is a great deal of pulp wood in Oregon and Washington; that is correct.

Mr. MAGEE. Going to waste and simply rotting.

Mr. GREELEY. Some of it; yes.

Mr. MAGEE. And it is a good deal nearer than Alaska.

Mr. GREELEY. It is nearer geographically, but not necessarily is it more practicable to manufacture.

Mr. MAGEE. I was wondering what the trouble is. The great cry is that there is no material from which to manufacture newsprint paper, but up there in those forests there are unlimited quantities of it rotting and wasting away, and nobody appears to pay any attention to it. There was a great slashing of it through governmental operations there in time of war in an effort to get out a little spruce. It was one of the most discreditable and disgraceful exhibitions in the great forests of the country that I ever personally observed, and I think all the other members of the committee who saw the result of those operations felt the same way about it.

Mr. GREELEY. There is unquestionably an excellent opportunity for the paper industry in Oregon and Washington, both on private lands and on the national forests.

Mr. MAGEE. I saw great trees of large dimensions and several feet in diameter just slashed down and lying there rotting—spruce timber just simply rotting and wasting away.

Mr. GREELEY. Was that the result of the operations of the Spruce Corporation?

Mr. MAGEE. Yes; the Air Production Service, in their attempt to get out spruce for aeroplanes.

Mr. GREELEY. All I wish to say in that connection is this: That we have a chance to sell this pulp timber in Alaska on the national forests; we have the applications, and there are certain things which

favor Alaska, particularly logging factors, the marvelous network of waterways, and the fact that the whole country is right on tide-water. The point I want to make is that as a business policy the Forest Service ought to be prepared to encourage that development.

Mr. MAGEE. The spruce operations in Washington and Oregon are right near the coast.

Mr. GREELEY. Some of them; yes.

Mr. MAGEE. Well, the main ones.

Mr. GREELEY. Yes.

Mr. MAGEE. The great stands in Alaska must be many thousands of miles beyond these stands in Washington and Oregon.

Mr. GREELEY. It is 670 miles from Seattle to paper-manufacturing sites in southern Alaska. Of course, there are plenty of chances for paper mills in Oregon and Washington; please do not misunderstand me on that. We have pulp timber also in Alaska, and we have a demand for it.

Mr. MAGEE. The timber in Alaska is probably healthy and growing timber.

Mr. GREELEY. The same situation exists in Alaska that exists in Oregon and Washington; there is timber in those national forests dying every year from old age.

Mr. MAGEE. There is not the same situation, because there has not been the slashing that I have mentioned.

Mr. ANDERSON. From a commercial standpoint it might not be well to undertake to develop something that has been slashed over, whereas the paper interests might be willing to develop a pulp mill in a national forest where everything is standing.

Mr. GREELEY. The right answer to your proposition, sir, would be this: If a paper mill, or several paper mills, could be built on Puget Sound and would offer a price for pulp wood that was reasonable, a lot of this waste timber would be brought into the Puget Sound market. That is one of the things I have suggested to newsprint manufacturers, because there is just exactly what you say, an immense amount of stuff going to waste in the present logging operations in Oregon and Washington.

Mr. MAGEE. What seems rather peculiar to me, along the line of the protection of the forests, is that an effort should be made to get spruce or other pulp wood 700 or 800 miles from continental United States, which would necessitate the slashing down of healthy and growing timber, while there are such immense quantities of it rotting and wasting away in the tremendous spruce forests of Oregon and Washington.

Mr. GREELEY. As a matter of fact, there is a great deal of waste in both places; our virgin forests in Alaska contain a great deal of timber that is rotting away because it is too old. There should be a paper and pulp development in both localities.

On many national forests the point has been reached where we can not accept additional timber sales or other new business without an increase in personnel to handle it. That has become a very urgent question with us, and I am anxious to have the committee consider it in that light. You can see from the chart and statements I have given you how our business during the past 10 years has increased beyond all proportions to the increase in appropriations and the increase in

personnel. We have simply reached a point where we have either got to increase our personnel or stop an increase in business, because we can not take on new business without the men to handle it.

DEMAND FOR SUMMER HOMES IN NATIONAL FORESTS.

The principal factor is this very large demand for national forest timber. Aside from that, however, there is a rapidly growing demand for summer homes on the national forests. Under a special law Congress authorized the Forest Service to lease summer-home sites within the national forests for periods not exceeding 30 years. We have had many more demands for that sort of use than we could possibly comply with. The income from this source last year exceeded \$50,000, and the volume of the business is indicated by the fact that 3,700 permits of that character were issued. Now, it is just a business question; how far does Congress want us to carry that use of the national forests? We could extent it to a good many thousand permits and with a corresponding increase in annual revenue.

Mr. MAGEE. You mean, they are permitted to have living abodes in the forests?

Mr. GREELEY. Yes, sir.

Mr. MAGEE. They lease the land?

Mr. GREELEY. They lease the land; yes, sir.

Mr. BYRNES. For what term of years, generally?

Mr. GREELEY. The law provides that areas of not over five acres can be leased for a period of not exceeding 30 years, and our leases range up to 30 years.

Mr. BYRNES. What do you generally charge?

Mr. GREELEY. To a man who simply wants to build a little cabin and home for himself, the charge is quite nominal, only \$5 a year, and from that it runs up to \$25 a year for the more pretentious affairs.

Mr. MAGEE. Of 5 acres?

Mr. GREELEY. Not over 5 acres, and most of them very much less.

Mr. MAGEE. A man gets the use of the land?

Mr. GREELEY. Yes, sir.

Mr. MAGEE. Tills it?

Mr. GREELEY. No; it is not for cultivation; it is only for summer occupancy.

INCREASE IN PERSONNEL AND SALARIES.

The increased personnel which is asked for in our estimates is almost wholly in the field and will be employed almost altogether for better protection from fire, for the handling of new business, and for technical work on the ground. We are not increasing our overhead in these estimates, but, on the contrary, are reducing it. There will be a net decrease of 14 in the number of administrative employees, and by administrative employees I mean the employees in the Washington and district offices. We are going to decrease the number of forest supervisors by 9; on the other hand, we are asking for an increase of 145 in the field positions, for technical and administrative work and fire protection, including the increases under the various special schedules; and we are asking also for an increase of 446 men employed during the summer months alone, forest guards and timber

scalers employed for periods of three to six months during the fire season and the busiest time of the year. Practically the only increase which means more people employed in overhead offices is an increase of 28 in the clerical grades, and a large number of those new positions will be used in the national forest offices.

Aside from the fire hazard and the increased volume of business it is my strong conviction that increases are seriously needed in the Forest Service to provide rates of compensation necessary to carry on this business. The question of salaries, as I view it, is not one of justice to the employees but of how efficiently does Congress wish us to run this business and how efficiently are we going to comply with the needs and requirements of the industries and communities which use the national forests? My approach to this whole question of salaries has been what compensation should the Forest Service pay in order to get employees who are qualified to run our business!

Mr. MAGEE. That might apply to Congress.

Mr. GREELEY. I do not doubt it. The present statutory roll of the Forest Service was fixed in 1911; in the 10 fiscal years since that time the base salary of the average forest supervisor has increased \$200.

Mr. ANDERSON. Since when?

Mr. GREELEY. Since 1911.

Mr. ANDERSON. I can not agree with you on that; you ought to know, but I think you are mistaken.

Mr. GREELEY. That is the increase in our base salary, not including the bonus. The base salary of the average forest ranger has increased \$120 in 10 years and the base salary of the average clerk \$46.

PAY OF RANGERS.

Mr. MAGEE. What do the rangers get now?

Mr. GREELEY. The average ranger gets \$1.276 plus the bonus.

Mr. ANDERSON. Of course, that figure is not intentionally so, but it is nevertheless a misleading figure, because I suspect that the number of people on your rolls at the basic salary is less than it was previously and that there have been increases at the top of the rolls, which have resulted in a general increase in the average salary paid for this class of service. I have a statement here, furnished me by the department, which shows the average salaries of the scientific and technical employees under the lump sums, and this, I presume, would include the average ranger, clerk, etc., in the Forest Service. This shows an increase in the average salary paid in the Forest Service from July 1, 1917, exclusive of the bonus, to July 1, 1920, of \$688.

Mr. MAGEE. Do these rangers work the whole year?

Mr. GREELEY. Yes, sir.

AVERAGE SALARIES OF EMPLOYEES—RESIGNATIONS.

Mr. ANDERSON. In order to get these figures in the record I will say that on July 1, 1917, exclusive of the bonus, the average salary in the Forest Service was \$1.757, and on July 1, 1920, inclusive of the bonus, the average salary was \$2.445.

Mr. BYRNES. That includes all employees of the Forest Service?

Mr. ANDERSON. All of the scientific and technical employees employed out of lump funds. As a matter of fact I have rather hurriedly gotten together some figures, and according to my figures for 1914 the average pay for the grades of supervisors, deputy supervisors, and forest rangers amounted to \$1,253, and in 1921, which is the current year, the average including the bonus was \$1,638.

Mr. GREELEY. What does that show the average increase?

Mr. ANDERSON. Around \$400.

Mr. BYRNES. \$400, inclusive of the bonus.

Mr. GREELEY. Yes, sir. These various compilations, of course, would not necessarily check, because I have prepared them by groups of employees. Our average on the statutory roll, which represents the class of our employees whose salaries are directly under congressional control, in the fiscal year 1912 was \$1,187. For the fiscal year 1921 it was \$1,312, exclusive of the bonus, which shows that the increase in base salary was only \$125. On the miscellaneous or lump-sum rolls the increase has been somewhat higher. The fact that the increases which we have obtained in 10 years, which average \$120 in the base salary of forest rangers and \$200 in the base salary of forest supervisors, are not adequate is shown by the overturn among the employees in the Forest Service, particularly during the past two years.

Mr. ANDERSON. Has not that been true of all industry? Has not the overturn been abnormal in every industry in the last two years?

Mr. GREELEY. I think it has, with the exception of the industries that have met the situation by increases in salary.

Mr. ANDERSON. The only ones that have been able to do that, at least during the war, were the war industries that had the advantages of war contracts, etc.

Mr. GREELEY. We are losing clerks at the rate of 37 per cent a year, the heaviest loss being in the Forest Products Laboratory at Madison, where we have an overturn of nearly 55 per cent among our clerks. We also have a very heavy loss on the national forests, where the highest-grade clerks in our employ are required. There we are losing 44 per cent of our clerks a year. We are losing surveyors and engineering employees at the rate of 37 per cent a year, and we are losing our forest rangers at the rate of 32 per cent a year.

Mr. MAGEE. Do you not think that with the gradual deflation going on we are certainly getting back to our normal condition, and that these abnormal conditions you speak of will change, and beginning the 1st of next July you may have a very increased demand for these places?

Mr. GREELEY. I would like to cite this fact—of course, I can not prophesy just what is going to take place.

Mr. MAGEE. No; if one's foresight were as good as his hindsight he would be a wonderful man.

Mr. GREELEY. But during the last fiscal year we lost 330 rangers on account of voluntary resignations, and we will not have enough eligibles under the civil-service examinations to fill those vacancies. That shows you how attractive the job is now.

HOMES FURNISHED RANGERS.

Mr. ANDERSON. What do these rangers have to furnish now? Do they have to furnish a horse?

Mr. GREELEY. They have to furnish horses wherever horses are needed in their work.

Mr. ANDERSON. And you furnish them in some instances, I take it, with motor cycles or Fords?

Mr. GREELEY. No; very rarely. We have very few of those machines on patrol work. We have a few railway speeders which are operated by rangers.

Mr. BYRNES. Do you furnish them with homes?

Mr. GREELEY. Sixty-three per cent of the rangers, who are required to be stationed in particular places, are furnished quarters in the form of ranger stations. The rest of them have to provide their own quarters.

Mr. BYRNES. Does the man who has to furnish a horse have to feed the horse?

Mr. GREELEY. No; we have a forage allowance which takes care of the bulk of the horse feed. It does not take care of all of it, particularly under present conditions, but it does take care of the bulk of it.

The average base salary of the clerks employed in the Forest Service is \$1,155 per year. Fifteen per cent of our clerks receive over \$1,200 and 60 per cent receive less than \$1,200 as a base salary. During the past year we lost 208 clerks, or 37 per cent of our force, and we are constantly experiencing difficulty in filling the lower-paid clerical positions. Our greatest difficulty in connection with clerks is on the national forests. A national forest clerk has to be an all round business man. He has to handle the purchase and shipment of supplies. He has to handle the accounts of the forest. He has to be custodian of its public property and has to serve as an all round business assistant to the supervisor. For that reason we endeavor, as far as possible, to obtain men for these positions of commercial experience, but to-day we have 10 vacancies on our national forests for clerks that we can not fill. On a considerable number of forests we have put in clerks who are not properly qualified for this job. Our situation as to clerks is made more acute by the disparity between the salaries in the Forest Service and those in other Government organizations. For example, in a single State within the last few months we have lost four clerks, who have gone to the Internal Revenue Bureau.

Mr. ANDERSON. You can talk to Mr. Magee, who is responsible for all these increases in the other departments. You can go right after him, because here is where you have your chance.

Mr. GREELEY. In these particular cases the Internal Revenue Bureau offered our clerks from \$200 to \$400 more than they were receiving in the Forest Service and assured them there would be further increases on January 1.

Mr. MAGEE. Was this for prohibition-enforcement work?

Mr. GREELEY. I do not know, sir.

Mr. MAGEE. Do you not know that the appropriation made for such purposes was made in a lump sum?

Mr. GREELEY. I do not know about the details of those appropriations, but I do know that we are constantly losing clerks to other organizations which for some reason or other are able to pay them higher salaries than we can.

Mr. MAGEE. The answer to the suggestion of the distinguished chairman is that it is apparent, I think, that if Congress makes an appropriation in a lump sum, the salaries are fixed by the head of some bureau or department and that Congress has relinquished its authority to fix specifically the salaries of any persons employed in the department, and their salaries are fixed by the chief of the bureau or department and are paid from such lump-sum appropriations.

Mr. GREELEY. I think myself that the answer to the whole proposition is along the lines of Government classification applicable to all grades of employees.

Mr. MAGEE. Yes; but to make it applicable to your position here, if the distinguished chairman recommended and put through a lump-sum appropriation, I presume your department could take care of its salaries.

Mr. GREELEY. We could; yes, sir; although that is not the form of appropriation we are asking. We are simply asking for increases in the statutory roll for clerks.

The average forest supervisor, including his bonus, receives \$2,368. He is expected to be the business manager of public property that may be worth anywhere from \$15,000,000 to \$20,000,000. He is expected to take care of an income producing business of from \$15,000 to \$160,000 a year. He is expected to represent the Government in dealing, often with 800 or 1,000 different forest users, lumbermen, stockmen, miners, and the like, and they all want to have their business done in a hurry and done right. We are expecting those duties from a \$2,368-a-year man, including every penny he gets, and gentlemen, you can not run the business on that scale of salaries. That is the problem.

Mr. ANDERSON. The man who is handling \$20,000,000 worth of property, in every case, is not getting a salary of \$2,300.

Mr. GREELEY. \$2,368 is the average. The highest paid man gets \$3,240.

Mr. ANDERSON. You have 1 supervisor at \$3,240, 1 at \$2,880, 8 at \$2,500, and 16 at \$2,380, exclusive of the bonus.

Mr. GREELEY. Yes.

Mr. MAGEE. I think as a general proposition it must be conceded that in these times salaries generally are inadequate. The salaries of Members of Congress are the same way. If a Member of Congress can pay his expenses here while Congress is in session out of his salary, I think he is pretty fortunate.

Mr. GREELEY. The case of a supervisor who is handling a \$20,000,000 property and a large income-producing business is not rare by any means. It is not limited to half a dozen men at the top of the list. We have 71 forests, the income of which last year exceeded \$25,000 a year.

Mr. MAGEE. The point I make is, and I am not criticizing you, you have got these conditions, the Secretary of the Treasury is carrying a current deficit of several billion dollars on temporary loans, going into the financial markets and absorbing all the money which re-

stricts credit and is paying 5½ or 6 per cent interest, affecting the market value of Liberty bonds and State and municipal bonds, and we have got to pay up this indebtedness and get back to a normal condition, and how are you going to do that by increasing salaries and increasing expenditures, regardless of the real equities and perhaps inequalities that exist in the different departments. It seems to me we have here a proposition that we ought to meet squarely.

Mr. GREELEY. Yes. It is not up to me to indicate just where the Government should economize, but it is up to me to tell you gentlemen what is going to happen in this business.

Mr. MAGEE. I appreciate that is your duty and I am glad to hear it, but, on the other hand, it seems to me it is also our duty, at least, I feel that it is, to indicate that we have got to economize and reduce public expenditures until we get back to normal, and you can not do that unless everybody puts his shoulder to the wheel.

Mr. GREELEY. I recognize, of course, Mr. Magee, that there is a very large problem on the other side, and I am not attempting to indicate just how the balance should be struck between the two demands; but it is up to me to have you gentlemen understand clearly just what is involved in the handling of the national forests, and what is going to be the effect of trying to run them on too low a scale of salaries and with too small funds for sufficient protection. That is my problem.

The average ranger, including his bonus, gets \$1,500 to \$1,600 a year. He is the man who is in charge of a district of from one hundred to five hundred thousand acres of public timber land. He has got to be qualified to cruise timber, to administer timber sales and other forest uses, to supervise road and trail construction, to direct, oftentimes, a large protective organization in the summer, and to employ temporary labor and buy supplies under emergencies on a big scale. The business and even the livelihood of a good many western people who depend on the national forests is in his hands and you have got to have a high-grade man in that job. With a loss of 32 per cent of those rangers a year, our problem of giving satisfactory service to the people who use the national forests is becoming more and more difficult every year. I want to emphasize the point that where this thing hits us hardest is in our forest clerks, our forest supervisors, and our forest rangers. There you are dealing with men who are business men, who are charged with commercial transactions. It is not a case of research, although we have somewhat the same situation in our research organization. It is Government business, and it is business that can not stop, because you have got so many industries and people in western communities built up more or less around the national forests that we have got to carry it on. The Government can not afford to have cheap men in those jobs.

We are experiencing in a good many ways the effects of the loss of experienced and well-qualified men. There have been costly mistakes made in handling our forest fires, due to the loss of an experienced ranger, and, Mr. Magee, I could point you out cases where, because a green man was on the job, instead of an experienced man who knew that country and had been through the game before, mistakes have been made which resulted in very large losses and in large emergency expenditures.

Mr. MAGEE. I think that is quite likely to happen in any kind of business, and even an increase of the pay might not have held the experienced man. There must be changes and new men must be instantly taking the places of older men. That is true in every kind of business.

Mr. GREELEY. That is perfectly true. A normal overturn is to be expected and is not necessarily a bad thing, but when you lose one-third of your experienced business executives in the field every year, it does become a very acute problem of how to carry that business on and carry it on efficiently.

Mr. MAGEE. But in meeting that problem you necessarily have to take into consideration the world convulsion, and when the great powers of the world for five or six years concentrate all their energies and resources in trying to kill people and destroy property, the resulting condition is necessarily abnormal and you can not get back in a minute. We have been facing abnormal conditions. They are gradually getting better and the question seems to me, in making appropriations for a year or a year and a half in the future, to draw some conclusions as to whether or not things are not rapidly getting back toward a normal situation.

Mr. GREELEY. Of course, it is not possible for me to indicate where the process of deflation may stop. I would just like to suggest this, taking the living cost figures compiled by the Bureau of Labor Statistics as the best data we can get, the increases which our people have had in salaries since the present statutory roll was fixed, plus the bonus, plus the increases we have asked for in these estimates, all simply make up 64 per cent of the decrease in the purchasing power of the dollar.

Mr. MAGEE. You are better off than Members of Congress, are you not?

Mr. GREELEY. If we put all these increases into effect to-day our people would have just 64 per cent of the salary they had in 1911 measured in the purchasing power of the dollar.

Mr. MAGEE. We have about 33½ per cent so you beat us somewhat.

Mr. GREELEY. That is on the basis of the increases we have asked for and not what we have got.

Mr. MAGEE. It seems to me the remedy is toward increasing the purchasing power of the dollar rather than a constant and continuous increase in salaries.

Mr. GREELEY. Another question which has become very serious is the extent of the complaints which we are receiving from forest users in the West and from Members of Congress in the Western States over the unsatisfactory service which rangers and supervisors are giving the western people in certain cases. We investigate those complaints and we find that sometimes they are not well founded and in other cases they are, and that where a mistake has been made in dealing with some forest user, it usually goes back to a green man who has taken the place of an experienced man. That is a situation which is becoming increasingly difficult for me to handle. The whole question about these salary increases put in a nutshell is just this: how efficiently does Congress want this public property to be administered; how efficiently do you want our business done?

Mr. MAGEE. I know of one accountant who was in one of the departments of the Government drawing \$4,000 a year who has been transferred to another department and now draws \$15,000 a year. Do you think his services are any more efficient at \$15,000 than they were at \$4,000 a year?

Mr. GREELEY. The Forest Service is gradually deteriorating in efficiency. I have got to make that confession to this committee.

Mr. MAGEE. What I have in mind is that increased pay does not necessarily mean increased efficiency.

Mr. GREELEY. Despite all our efforts it is becoming increasingly difficult for us to give the public the service which they expect from our supervisors and rangers and other field personnel. The situation is such that it begins to threaten the success of the whole national forest policy. It was discouragement over just this situation that led my predecessor, Col. Graves, finally to quit, when he was satisfied he could not do anything more to remedy it, and the same situation which confronted him confronts me, and confronts my associates. It is getting more acute all the time. It is not a sudden crash. It is a gradual deterioration in efficiency. The tendency of the salary situation is to destroy the life and effectiveness of our organization, to force its best men to abandon Government work, and to weed us down to the poorest and least capable.

There is only one way to meet this situation and that is by some adjustment of salaries. We have a great many employees who have turned down outside offers because of their loyalty and their confidence that sooner or later some form of equitable adjustment would be made, but, in my judgment, unless Congress acts this year we are going to have a loss in personnel that will be very much more serious than anything we have had hitherto. The effect of it upon our fire protection next year and our ability to take care of this volume of business is simply appalling to me. That is the situation which I face and I am anxious, certainly, that the committee should understand it. The real injury is not to the employees but to the Government.

To meet this situation as to salaries we have proposed a series of increases in the statutory roll which range from a minimum of 22 per cent to a maximum of 35 per cent; and in money from a minimum, by groups, of \$142 for the subclerical grade to \$595 for our forest supervisors. The average base salary on the statutory roll for 1921 is \$1,312, and the average increase which we propose is \$321, or 24.4 per cent. This represents the best of our judgment as to the need for increased compensation and a partial adjustment of salaries to the reduced purchasing value of the dollar, as a plain matter of business urgency.

Now, it does not seem to me, gentlemen, that we can dismiss this salary question by saying it is going to be taken care of through the process of deflation. Admitting that a certain part of it will be taken care of through deflation, it is inconceivable to me that we are going to have within six months or a year or two years a scale of prices comparable to those before the war. I have not seen any economist yet who anticipates that.

Mr. BYRNES. What is the increase in compensation as compared with before the war?

Mr. GREELEY. As compared with before the war the increase proposed would be on an average \$321 per person.

Mr. BYRNES. In speaking of the purchasing power of the dollar, and in reference to your statement that you know of no economist who would prophesy it would be as great as before the war, how would the increase in compensation which you propose compare with before the war?

Mr. GREELEY. The best comparison I can make is that after giving our employees \$321 on the average higher base salary, after giving them the bonus, and after giving them the increases which they got in the last appropriation bill, they will have caught up to the extent of 64 per cent with the drop in the purchasing power of the dollar. In other words, their salary with these increases to-day would represent a purchasing power of 64 per cent of their salaries prior to the war. Now, it is not conceivable to me that the drop in values and the increased purchasing power of the dollar will be so great within the next year as to make these increases unwarranted. We have still a margin of 36 per cent that it has got to drop in order to bring them out even.

Mr. BYRNES. Taking cotton, for instance, you could have bought 2½ pounds of cotton for \$1 in August and to-day you can buy nearly 8 pounds for \$1, and I think you can buy in proportion that much more wool and you can buy that much more corn, and the question is whether or not these reductions in raw materials will be reflected in the finished products.

Mr. GREELEY. Yes.

Mr. BYRNES. If they are reflected, it will certainly amount to more than the 35 per cent to which you refer, and if they are not reflected in the finished product, they will not amount to 35 per cent. That is about the case, is it not?

Mr. GREELEY. I think so; yes, sir.

INCREASED FIRE HAZARD—NATIONAL FOREST PROPERTY PROTECTION.

To summarize the increases which the Forest Service is asking for the three major purposes: The first is to take care of the increased fire hazard and to give the national forest property adequate protection. We are asking for \$592,096 more for that purpose, which is almost exactly the average deficiency appropriation which we have had to ask Congress for annually for the last 11 years.

Mr. ANDERSON. Of course, with this increase you will not do away entirely with deficiencies?

Mr. GREELEY. No, sir.

Mr. ANDERSON. There will be years, just as there have been years, when you will have very large ones?

Mr. GREELEY. That is true. The exceptional fire season is going to create conditions which are difficult to cope with and for which it would not be wise to build up a permanent staff of rangers and guards. What we are asking for is an increased fund for fire protection which will meet the average season, as our experience during the last 12 years shows what the average season demands. In the average season we have had to come to Congress for a deficiency appropriation of about \$592,000, and the thing that hurts is that

under those emergency conditions you can not expend that money effectively and economically. I want to meet that situation by taking care of the average season, which we can not take care of now. In our judgment, this increase of \$592,000 for fire protection will take care of the average season.

In the second place, the increased appropriations asked for are to take care of our greater volume of business, the increased sales of timber, and other uses of the national forests. For that we are asking an increased appropriation of \$356,770 to take care of new business.

The third thing for which we are asking an increase is to make promotions on our statutory roll and such promotions as would be authorized under the miscellaneous funds for general expenses on the general forests and overhead administration. For promotions or increased salaries we are asking \$725,828. In other words, taking our three big items, the statutory roll, the general expenses on national forests, and the general administrative item—taking those three items together—the split in the increase would be \$592,000 for fire protection, three hundred and fifty-six thousand and odd dollars for increased business, and seven hundred and twenty-five thousand and odd dollars for promotions.

Mr. ANDERSON. Permit me to ask you a question. Which do you think is the more essential of the two propositions proposed—perhaps this is an unfair question to ask you—more men or higher salaries?

Mr. GREELEY. I think, from the public standpoint, that the most essential thing is better fire protection, and next to that higher salaries. I think it is more important to hold a reasonable nucleus of experienced and trained men by paying them the salaries necessary to hold them than it is to expand the organization in other directions than to take care of the fire hazard. While the problem of salaries looms very large in my mind, I must say that I think the first obligation of Congress is to provide for the protection of this property from fire.

Mr. BYRNES. I understand that that necessarily involves the other question?

Mr. GREELEY. The two are tied in together. To protect the property from fire effectively we must keep a certain nucleus of experienced men. Without that type of man the situation would be almost hopeless.

Mr. BYRNES. How could you best increase the fire protection—by increasing the salaries or by employing more men?

Mr. GREELEY. I would accomplish it by splitting any funds we are given, about 50-50 between the two propositions, increasing the compensation of the men we have and employing a larger force of guards during the danger months.

Mr. ANDERSON. Permit me to ask you a question. Is it largely a question of increased number of guards during the fire period or a question of increasing your year-round organization?

Mr. GREELEY. It involves both, but the increase would be largely in summer guards with some slight increase in the average period during which they are employed.

We propose to use the money asked for general expenses on national forests to employ 401 additional forest guards for an average period of between three and four months.

Mr. ANDERSON. How many have you now?

Mr. GREELEY. The number of temporaries during the present fiscal year is 2,242 men, guards employed from three to six months. We would increase those to 2,600.

Mr. BYRNES. What type of man can you employ for only a short period during the year?

Mr. GREELEY. It is a problem to get the best qualified men. We are able to get a good many of the local settlers who have homes and who are glad to get employment for from three to six months out of the year, and who are good, seasoned, hardy men, well qualified for that work. Then we get a certain number of men who belong to the more or less floating labor class in the lumber camps of the West. An experienced lumber jack usually makes a good forest guard. We get those classes of men just as far as we can, and if we can not fill the number of positions from those sources we have to get less desirable men, some younger men who are not very long out of school, men from the western towns who have not gotten located yet and are willing to take three or four months' work during the summer with the Government. The type of man varies, of course, with the general industrial situation and the labor market.

For a good many years the general expense fund for national forests has been split into a large number of different items. Our appropriation bill for the present year carries 144 corresponding items for general expenses on the different national forests, and eight corresponding items for the cost of general administration at Washington and in the field districts. The allotment of these funds would be greatly simplified and our bookkeeping made very much easier if each of these sets of corresponding items could be combined into one.

In the nature of things it is not possible to estimate very closely 18 months in advance just how general expenditures should be split as between the various national forests. These general expenditures take care of the forest guards and temporary scalers and all personnel employed on the national forests outside of what is carried on the statutory roll.

Mr. ANDERSON. May I interrupt you?

Mr. GREELEY. Certainly.

Mr. ANDERSON. Is not your force in these different forests, at least part of it, normally fairly constant?

Mr. GREELEY. Yes, sir; that is true, but the business demands shift from forest to forest.

Mr. ANDERSON. This work is all done under contract, and you know more or less in advance when the cutting season will be?

Mr. GREELEY. It is not possible to estimate that 18 months in advance with sufficient accuracy to take care of the situation. We find as a matter of experience that no matter how carefully we compile our appropriation estimates when the actual allotments are necessary a year later it is impossible to avoid making a good many transfers between the national-forest items.

Mr. ANDERSON. You are only six months ahead of your next fiscal year. I can appreciate how it was a great deal more difficult last

August than now. You are only six months ahead of the beginning of the next year now!

Mr. GREELEY. Yes, sir; but these estimates have to be worked up by the supervisors and district foresters in the field and come into the department, and they have to be ready to submit the 1st of September or thereabouts. We have found as the thing works out that there have to be a good many transfers, as permitted under a 10 per cent clause in the bill. This is not a matter of the first importance. It would simplify the administration of the funds and make a good many of the allotments and reallolements unnecessary if Congress should appropriate for the general expenses on the national forests in one fund instead of 144 funds. However, in accordance with the chairman's suggestion a few days ago, I have prepared a subdivision of this general fund by national forests and also by States, and I wish to ask the subcommittee to give us just as few different appropriations under that one main fund as possible. For administrative purposes, we would prefer a single fund for general expenses on national forests in the form in which our estimate has been presented. We would prefer another fund for general administration covering the items hitherto appropriated for the Washington office and for our six field district offices.

As a matter of fact, the Treasury Department carries but one fund for general expenses on the national forests. As demands for timber sales change and new contracts and new applications are received at this point and at that point, business requirements on the forests change. The expenditure could be much more simply and readily handled if we had a single fund rather than 144. If the single fund is not desirable, in the judgment of the committee, I ask you to consider giving us an appropriation by each State which contains national forests, which would mean 28 funds instead of 144.

I will be glad, Mr. Chairman, to leave that data with you for your use if you require it.

INCREASE IN SALARIES—ADDITIONAL EMPLOYEES.

Mr. Chairman, I am now prepared to take up the major items, and I think that the brief analysis which I have made can best be presented in connection with them item by item.

We are requesting Congress this year to split the statutory roll previously carried for the Forest Service into two separate items. First, a statutory roll corresponding to the present, except in the number of certain employees and the average salaries requested; and, second, an item covering specifically the grades of forest supervisor, deputy forest supervisor, and forest ranger.

As I indicated this morning, our supervisors, deputy supervisors, and rangers are the corps of business executives in the field around which the administration and protection of the national forests very largely center. We have found it extremely difficult to carry that corps of executive men on a fixed statutory roll, with no leeway in making promotions. I think you can appreciate such difficulties in the case of men of this type. You have here a supervisor who is extremely energetic and promising; he is a coming man and you are very anxious to retain him. He is worth a great deal more than

his present salary, but you have absolutely no possibility of making an adjustment in his compensation until there is a vacancy in the statutory roll. We have lost a great many desirable men primarily on that account. The statutory roll is so inflexible that as applied to employees in those grades and with such high qualifications you can not make the adjustments which very often are necessary. A vacancy occurs in a forest that is particularly important, with a particularly large volume of business, or in one which requires residence at a town where living expenses are exceptionally high. You have a certain man in mind whom you would like to put in charge of that forest or ranger district, but unless you have a vacancy to fill right on the statutory roll you can not adjust the salary of the employee to fit the new conditions of his employment, both as to living costs and the responsibility which he is called upon to assume. That situation comes up over and over again, and because of it we are asking the committee to consider separating our supervisors, deputy supervisors, and rangers from the rest of the statutory roll and covering them in an item by themselves.

The committee which passed upon our appropriations last year took one step in this direction. While the supervisors, deputies, and rangers were largely carried on the statutory roll as before, a new item of \$125,000 was inserted in the bill for the present fiscal year for the employment of supervisors, deputies, and rangers without statutory limitations, as a safety valve to take care of the increased personnel in those grades that might be found necessary. We ask you this year to transfer all of the supervisors, deputy supervisors, and rangers to an item of that character, but with limitations upon the number of men that can be employed at stated rates of compensation; that is, we propose a combination with a larger degree of flexibility than the present statutory roll permits on the one hand and on the other a large measure of control by Congress over the rates of compensation which we are permitted to pay. That has appeared to us to be a rational, businesslike solution of this question. It is not a lump fund, because there are stated limitations on the number of men who can be employed at given salaries, and on the other hand there is sufficient flexibility to take care of the situation which I have described.

Mr. ANDERSON. It seems to me you would have substantially the same inflexibility unless you established the salary scale under the lump fund as you have on the statutory roll, a little more flexibility perhaps, but you have your men there, and you are paying them certain salaries, and you can not take the salaries away from them. Unless you have a leeway in a reserve fund of some sort, you are just as badly off as before.

Mr. GREELEY. Even with the limitation as to the number of men who can be employed at stated salaries we would have more leeway than under the present form of statutory roll.

Mr. BYRNES. How will it?

Mr. GREELEY. The item which we propose, as stated on page 118 of the Book of Estimates, reads: "For the employment of forest supervisors, deputy supervisors, and rangers, \$2,318,000: *Provided*. That there may be employed from this fund 12 at not to exceed \$4,000 per annum, 36 at not to exceed \$3,500 per annum, 92 at not to

exceed \$3,000 per annum, 73 at not to exceed \$2,500 per annum, and 1,112 at not to exceed \$2,000 per annum."

Now, we would not employ more than a few men in each group at the maximum salary named; probably we would not employ any at the maximum at first. Men would be increased gradually from their present salaries in accordance with the ability shown by the individual over a considerable period of time. New employees would be started at as low a rate as would be sufficient to secure qualified men. Their salary advancement would, under the proposed plan, be made to correspond closely with the increase in the responsibility and ability of each man, and it would be possible within the limits provided to pay an exceptional salary to an exceptional man instead of losing him from Government service, as often occurs now because of the inflexibility of the statutory roll.

For other classes of employees we propose a continuation of our former statutory roll with certain changes in the number of employees of the various grades and certain increases in salaries, which I should like to summarize.

We have 512 clerks on the statutory roll for whom we propose an average increase in salary of \$315; we have 82 surveyors, draftsmen, and other men of engineering qualifications for whom we propose an average increase in salary of \$310; we have 10 employees of the photographer and artist group for whom we propose an average increase in base salary of \$390; we have 9 employees of the skilled trades group for whom we propose an average increase of \$262; we have 14 employees of the subtechnical group, laboratory aids and personnel of that character, for whom we propose an average increase of \$307; we have 54 subclerical employees, messengers, janitors, etc., for whom we propose an average increase of \$121. In making up this new statutory roll we have transferred 30 employees from existing lump-sum rolls, in accordance with the general arrangement or understanding that has been in effect between the committee and the Department of Agriculture that employees on the lump-sum rolls whose duties correspond with those of employees carried on the statutory roll and who are regarded as of permanent status should be taken over on to the statutory roll. We have provided for 21 new clerks as part of the increase which I indicated this morning to provide for the greater volume of work.

Mr. ANDERSON. To what extent are these 21 additional clerks due to anticipated new sales?

Mr. GREELEY. Fifteen of the proposed new clerks will be employed in the offices of the national forests and 11 will be employed in the district offices. The difference between the 26 and 21 will be carried under the general administration item. Those 26 new clerks will all be employed in the field, that is, outside of the District of Columbia, and they all are made necessary by the new business on the national forests and in the district offices.

FOREST SUPERVISORS, DEPUTIES, AND FOREST RANGERS.

Under the new item for supervisors, deputy supervisors, and rangers, we are including all employees in those grades at present carried anywhere in the Forest Service. This year they are split, the bulk of them being on the statutory roll and some of them on

llaneous roll. They should all be together in one item. We will fer to this new roll of a semistatutory character 5 supervisors 22 rangers now carried on the lump-sum roll. We are going the total number of supervisors and we are going to increase mber of rangers by 17. The promotions which we contemplate g among the supervisors, deputies, and rangers, if this item cted as presented, are the largest promotions that we contem- in the entire Forest Service, because that is the most criti- int in the Forest Service. The staff of business executives field is the point where we can least afford to have inexperienced rly qualified men. So we propose to promote 135 forest super- an average of \$595 in base salary.

propose to promote 73 deputy supervisors an average of \$571 112 forest rangers an average of \$316. The total increase in the ry roll and in the supervisors, deputies, and rangers' roll over esent fiscal year is \$804,664. Of that increase, \$647,868 will be or promotions, \$36,840 for new employees, and \$119,956 to are of transfers from lump-sum rolls. We will carry on the ll, all told, 1,904 positions. We are recommending promotions 79 out of the 1,904, and the average promotion that we are for is \$341.

increase in the statutory and supervisor roll is thus primarily reased compensation. There is a provision for 21 new clerks new forest rangers, and aside from that and some transfers of ns from lump-sum rolls the increase we have requested is for ed compensation. That is the gist of the statutory-roll item, ie roll for supervisors, deputies, and rangers which we ask to e separate. Unless you have some questions to ask about that his will terminate my statement regarding it.

ANDERSON. I went over every item in this business last year y forest from beginning to end, and I feel that the committee proposition down last year just as close as it could be cut, y too close. I do not see how it is possible to put through the a roll you suggest here.

GREELEY. Is that, Mr. Anderson, from the standpoint of the f the roll or the increased compensation which we are asking?

ANDERSON. Well, both, but not to an equal extent. It might ible to adjust the roll to give you some more flexibility, and it be possible to some extent, perhaps, to increase the salaries. t think that it is feasible to do either to the extent you pro- I do not want to be understood, of course, as passing on the is far as I am concerned, finally, but that is my present im- 1 about it.

GREELEY. I should like to say that this form of supervisor, supervisor, and ranger roll was patterned after the appro- made by Congress for the Vocational Board for Disabled and Sailors.

ANDERSON. We hope to get more efficiency than we did under appropriation.

LYNES. Do you know the reason that was done? I do not to speak of it, because I was partly responsible for that. It e because they had taken a lump sum and followed a rule ayng any man whom they employed more than \$500 more

than he received in his previous employment. When we discovered that rule, in order to have some check upon them, we adopted the schedule which you say became law.

Mr. GREELEY. Gentlemen, I think that a very good argument can be advanced for putting the supervisors, deputies, and rangers on a straight out lump-sum roll. These men are not like clerks and other employees with more or less fixed and uniform qualifications, where length of service combined with efficiency are usually the considerations upon which promotion is based. They are running business jobs and you must, within reasonable limits, adjust the salary to the business job, just as any commercial organization that operates 140 offices throughout the country has got to adjust the salaries to the volume and special requirements of the business handled from each branch office.

Rather than to suggest an out-and-out lump-fund item for this administrative force we have suggested this form of roll, believing that it would meet the requirements of Congress in providing for control over the scale of compensation. We put that in your hands by a range of limits. All we ask is flexibility to adjust the pay of the men to the jobs that they have from time to time.

GENERAL EXPENSES.

PURCHASE OF BUILDINGS—NEW LANGUAGE.

May I refer for a moment to item 61, on page 119, where in the general language, which defines the authority of the Secretary of Agriculture, we have included the word "purchased" about midway in the paragraph.

Mr. BYRNES. In the proviso?

Mr. GREELEY. Yes, sir; in order to give the Secretary of Agriculture the authority to purchase buildings as well as to erect them. It happens occasionally that we have an opportunity to purchase a building suitable and needed for administrative uses to better advantage and at lower cost than the amount for which a building could be erected. At present we have no authority to make such purchases. We have no idea of going into the general purchase of buildings by any means; it would simply be a matter of choice as to whether a building could be purchased to better advantage than a new building could be erected to meet a specific need in a given case, and for that reason the insertion of the word has been requested.

The next main item which we are requesting is a substitute for the 144 separate appropriations for general expenses on national forests. As I stated this morning, we feel that it would be very desirable for simplicity in accounting to substitute a single item for those 144 corresponding items which must of necessity be interchangeable to a considerable extent, and which are now interchangeable to the extent of 10 per cent. So I have treated the estimate for general expenses on national forests as a whole.

ADDITIONAL NATIONAL FORESTS.

Mr. ANDERSON. Does that include the item of additional national forests created or to be created under section 11 of the act of March 1, 1911?

Mr. GREELEY. Yes.

Mr. ANDERSON. Also the item for necessary miscellaneous expenses incident to the general administration of the Forest Service and of the national forests?

Mr. GREELEY. Yes.

FOR SALARIES AND FIELD AND STATION EXPENSES, ETC.

Mr. ANDERSON. And then the item for general maintenance?

Mr. GREELEY. That is still separate. I am discussing now item 63 on page 120. The existing legislation is No. 64 on page 122, consisting of 144 corresponding items for the various national forests. The increase proposed is \$700,000. This increase will be used to employ 87 new year-around people, who will be lumbermen, grazing men, trained foresters, and other technical employees, and who are required to take care of the increased use and business in the national forests. It will be used also to employ 445 additional short-term employees, 401 of whom will be fire guards, employed on the average 3.8 months per year; the remaining 45 will be temporary scalers required to supplement the year-around force during the most active logging seasons. It will also be used to increase the compensation of most of our present guards an average of \$50 per man during the fire season. Our forest guards are temporary employees paid on a temporary basis, and the rate of compensation must be adjusted to the wages necessary in each region to get reasonably qualified men. On the average that is going to amount to \$50 per man per season.

Mr. ANDERSON. Are the forest guards carried under this item divided among the 144 forests?

Mr. GREELEY. Yes, sir. The increase of \$700,000 will also cover our increased cost of travel, telephone, and telegraph service and other miscellaneous expenses aside from personal services. We also wish to devote \$145,000 of it to increased fire-fighting equipment and material. That is simply another feature of preparedness in our effort to take care of the normal forest-fire hazard by our standing organization and reduce the emergency fire-fighting expenditures as far as we possibly can.

Mr. ANDERSON. What is the character of this equipment?

Mr. GREELEY. It consists largely of fire-fighting tools, such as shovels, axes, picks, water-carrying equipment, packsaddles, emergency telephone wires, and that sort of thing.

Mr. ANDERSON. \$145,000 should buy a lot of such equipment.

Mr. GREELEY. Well, we have 156,000,000 acres of land to protect, and the wear and tear on that sort of equipment is heavy. What we are endeavoring to do is to get suitable caches of this equipment distributed over the national forests at strategic points so as to be ready when it is needed.

Mr. ANDERSON. What has been your previous annual expenditure for this equipment?

Mr. GREELEY. I can not answer that offhand, Mr. Anderson, but this \$145,000 represents the estimate of our field officers as to what is needed to give the fire-fighting organization an adequate skeleton outfit to take care of the average fire year.

Mr. ANDERSON. Will this be an annual expenditure hereafter?

Mr. GREELEY. We hope not.

Mr. ANDERSON. I suppose everybody whom you get from the outside and who is employed on this job takes shovels, axes, and whatever he can get hold of home with him when he finishes?

Mr. GREELEY. Not if our rangers are on the job. I suppose a few tools get away occasionally, but every forest officer is responsible for checking them up and accounting for all the stuff that has been issued to him. The \$700,000, then, will be split between five different purposes—\$354,000 for new employees, \$111,000 for the increased cost of temporary labor required in our fire-protective work, \$145,000 for additional fire-fighting equipment, \$63,000 to take care of the increased cost of travel, freight, telephone and telegraph services, and miscellaneous items, \$26,400 for promotions. That will be for the promotion of the relatively small number of lumbermen, trained foresters, etc., who are carried under this item for the general expenses of national forests. For example, we propose to promote 15 fire wardens or fire chiefs an average of \$72 each; we propose to promote 111 technical men, grazing men and timbermen, an average of \$191 each, and 13 lumbermen, who represent relatively high-grade timber appraisers, an average of \$318 each. Out of the \$700,000 but \$26,400 will go into promotions. The rest goes into better fire protection and provision for taking care of our increased business.

Mr. ANDERSON. Can you give us the scale proposed for the 87 men for whom you estimate \$175,000?

Mr. GREELEY. The 87 new men will amount to \$154,000, and the average is \$1,770 apiece; most of them will be grazing and timber men obtained from the forest schools, and year-around lumbermen and year-around timber scalers of whom we require high qualifications and practical experience; and \$1,770 represents the average salary proposed. The average expenditure for fire-fighting equipment, in response to your question, Mr. Anderson, has been \$61,000 a year, and we are proposing in these estimates to make it \$145,000 next year in order to have an adequate layout.

INCREASED COST OF SUPPLIES, TOOLS, TRAVEL, ETC.

Mr. ANDERSON. According to your figures you have estimated \$705,000, and you say \$180,000 is to cover the increased cost of supplies, tools, travel, and forage on the forests. Now, is that \$180,000 in addition to the \$61,000 that you have previously spent for that purpose, making \$241,000?

Mr. GREELEY. No, sir.

Mr. ANDERSON. The figures you have been giving us do not seem to correspond with the figures in the note.

Mr. GREELEY. There is a slight change, but there is no important change. The \$180,000 includes the \$145,000 for fire-fighting equipment, the rest of that going into the increased cost of travel, supplies, forage, telephone and telegraph service.

Mr. BYRNES. But here is the trouble; you have given us a figure of \$63,000 for the increased cost of travel, freight, etc. Where does that come in?

Mr. GREELEY. \$63,000?

Mr. BYRNES. Yes. You have given us that figure.

Mr. ANDERSON. You have given \$61,000 as the amount you have spent for this purpose. Now, do you want to add \$145,000?

Mr. BYRNES. The \$145,000 is for fire-fighting equipment, but he has given us the figure of \$63,000 for the increased cost of travel, freight, telephone and telegraph service, etc. I do not know the paragraph to which it has reference at all.

Mr. GREELEY. The difficulty is that the figures I have just given you do not correspond, item by item, with the figures printed on page 121. The item of \$180,000 on page 121 includes the increased equipment and the increased cost of travel, forage supplies, and miscellaneous items; I have revised that figure somewhat and made the total higher than \$180,000, but it is for the same purpose.

Mr. BYRNES. Then it really should be \$145,000 for fire-fighting equipment and \$63,000 for increased cost of travel, etc., or \$208,000?

Mr. GREELEY. Yes, sir; instead of the \$180,000.

NEW EMPLOYEES.

Mr. BYRNES. You have under (d) \$175,000 for 87 new men.

Mr. GREELEY. Yes, sir; I reduce that to \$154,000.

Mr. BYRNES. Where is this figure of \$354,000 for new employees?

ADDITIONAL FIRE GUARDS.

Mr. GREELEY. \$200,000 for additional forest guards and other short-term men, and \$154,000 for the 87 new year-around men. It is the sum of those two items.

INCREASED COST OF TEMPORARY LABOR.

Mr. BYRNES. Where is the item of \$111,000 for the increased cost of temporary labor?

Mr. GREELEY. That is (c), page 121. (c) is a combination of the increased cost of temporary labor and—

Mr. BYRNES (interposing). The bill gives \$150,000 and the figure you gave us was \$111,000.

Mr. GREELEY. \$111,000 for increased compensation to be paid temporary labor and \$26,400 to cover promotions for year-around employees.

Mr. ANDERSON. You say the \$111,000 is for increased compensation, but you mean promotions?

Mr. GREELEY. Well, it is for higher wages. These are not permanent employees; they are temporary guards. We employ 2,242 guards for a period of a little less than four months, on the average, and we must pay somewhat higher wages, amounting, on the average, to \$50 per man for the season. The increase in wages for these temporary employees amounts to \$111,000.

Mr. ANDERSON. I was misled by your statement that only \$26,400 of this amount represented promotions and, of course, promotions and increases in salary are synonymous to me.

Mr. GREELEY. The only distinction is between the promotions of year-around employees, who are on our permanent rolls, and the

wages paid to temporary laborers. In other words, when we employ forest guards we have to go into the local labor market, such as it is, and pay a wage high enough to get the men. They are in a different class from our year-around civil service appointees. That is the only distinction.

MISCELLANEOUS EXPENSES.

The next item is No. 65, on page 125, for necessary miscellaneous expenses incident to the general administration of the Forest Service. There, again, we have proposed to combine eight corresponding items.

Mr. ANDERSON. What did you do with the item for additional national forests?

Mr. GREELEY. The additional national forests are carried under the single item for general expenses on national forests.

Mr. ANDERSON. That is item 63?

Mr. GREELEY. Yes, sir.

Mr. BYRNES. Do you argue that by changing the form of this appropriation that you can save money in your accounting department?

Mr. GREELEY. I do not make any particular argument of that sort, because it would be easy to make the point too far-fetched, but it will greatly simplify our accounts; we can carry one item instead of 144, and the amount of clerical work, correspondence, and records required in making the transfers and keeping the 144 different items straight as an accounting proposition will be greatly reduced: I can not say that is going to mean a saving of any particular sum or that we could lay off any particular number of clerks, but it seems to me we have been perpetuating here a system of split appropriations for which there is no real justification.

Mr. ANDERSON. The justification in the minds of Members of the House is that when they see in the law that the particular forest in which they are interested is appropriated for to the extent of \$47,000 they think that amount is going to be spent there, but when they do not see it they do not know where it is going to be spent, and they are always fearful that funds will be diverted from one forest to another, that their people will not get the service they desire, and that they will come in for criticism in connection with it. Consequently there will be, in my judgment, very considerable opposition to putting this in one sum, particularly in view of the fact that we have had some experience of that sort in the last year, not with this particular item but with another item.

Mr. GREELEY. I appreciate that attitude on the part of the representatives of the different States, and as I said this morning, it is not a vital matter, although it is one of considerable convenience. I have prepared here, and will leave with you, a distribution of the total fund between the several States containing national forests, and a second distribution between the 140 national forests, and I will ask the committee to consider the advisability, if a single fund will not be satisfactory to the Congress, of splitting that between States so that we could carry but 21 items instead of 144.

The next item, No. 65, on page 125, is a combination of the eight items carried in the previous bill. In addition to our headquarters office in Washington the national forests are administered from sev-

eral district headquarters, each of which exercises a good deal of administrative authority in the business of the district. This results from our effort to decentralize the administration of the national forests and keep it as close as possible to the regions in which the forests lie. For the same reasons as before we feel that it would be as satisfactory and much simpler to combine the items for general administration into one, and in that combined total we are asking for an increase of \$170,030. Of that increase \$77,410 will go into the increased cost of doing business, particularly travel, the renting of headquarters outside of Washington, telephone and telegraph service, etc. It is unnecessary for me to give the committee facts as to the increase in the cost of travel, and in general terms the rent situation throughout the country is very generally known. This does not, of course, include rentals within the District of Columbia, for which there is one item covering the whole department.

Under this item, \$34,380 is asked for new employees. We will need 10 new employees in the district offices to enable us to increase our force of inspectors. We need to carry out more thorough and frequent inspections of the work in the national forests than we are able to do with our present personnel, particularly during this period when there has been and will continue to be so much change in field personnel. With old men leaving and new men coming in, frequent inspection is essential to break in the new personnel and keep the work up to standard. That is the primary reason for the increase in the employees in the district offices. We are also asking for two additional employees in the administrative work at Washington, who will be technical men and will handle technical subjects. The remainder of the increase asked for in this item is for promotions in the salaries of existing personnel carried under these funds.

MR. ANDERSON. How much is involved for these 12 new men?

MR. GREELEY. The promotions which we have provided for amount to \$58,240. This will promote 151 people, 26 employees in Washington at an average of \$190 each and 125 men in the various district offices at an average of \$426 each. The increased cost of travel and other expenses aside from personal service amount to \$77,410. This is the only statement I have prepared, Mr. Chairman, on this item, and unless there are questions regarding it, I will pass on.

MAINTENANCE, ETC., AND GENERAL ADMINISTRATION.

The next item is No. 67 on page 127.

MR. ANDERSON. What becomes of No. 66, which is your substitute for the 144 items in the specified national forests?

MR. GREELEY. Item No. 66 carries no additional appropriation. It is a summary of the appropriations made available for the use, maintenance, improvement of the national forests, and so forth, including general administration. It is simply a total figure. The elimination of the word "specified" is possible if the combination is made in the form we have asked it.

FIGHTING AND PREVENTING FOREST FIRES.

No. 67, on page 127, is the item which hitherto has been carried in the miscellaneous section of the bill. We have transferred it to the Forest Service section without change in language, because it is

a Forest Service expenditure exclusively, and we see no reason why it should not be carried with the other Forest Service items. This is the emergency fund which Congress has provided in varying amounts ever since our fire year of 1910 showed the necessity of having some fund over and above the regular appropriations to fall back upon in case of serious forest fires. For several years Congress gave us an emergency appropriation of \$1,000,000, to be drawn upon should the exigencies of the fire fighting season require it. Then the amount was cut and last year was brought down to \$350,000. As I stated this morning, our average emergency expenditure has been \$758,000 during the past 11 years, and we have had to come to Congress on an average for a deficiency appropriation of \$592,000.

Our hope, in presenting the estimate this year for an increased fire-fighting organization of men and equipment, is to be able to largely reduce the necessity for these emergency expenditures which, as I said this morning, are uneconomical and unbusinesslike. We can not hope to eliminate them altogether, and when an emergency does occur and exceptional expenditures must be made, it is essential to have an emergency fund that can be drawn upon so that we will not be compelled to incur a deficit. There have been at least two years in which the necessity of incurring a deficit and carrying that deficit before a deficiency appropriation could be made almost wrecked the Forest Service, because the deficiency appropriation was only made at the very last minute. We have asked this year for a much smaller emergency item than we have asked for for several years past on the ground that the increased appropriations requested for a permanent protective force should materially reduce the necessity for emergency expenditures. The item in this form prevents the expenditure of more than \$150,000, except in cases of an extraordinary emergency, so that if we are able to prevent the extraordinary emergency by a larger and better equipped fire-protective organization, the fund here appropriated will simply lapse into the Treasury. On the other hand, we have found it is essential that we have some emergency fund available to fall back upon if the character of the fire year necessitates it. In this item also provision is made——

Mr. ANDERSON (interposing). You talk about a reduction; as a matter of fact there is an increase. While you have some emergency language in there that may amount to something, as a matter of fact the item is an increase over last year.

Mr. BYRNES. And the note specifically says it is an increase.

Mr. GREELEY. An increase over the present appropriation?

Mr. ANDERSON. Yes.

Mr. GREELEY. That is true.

Mr. ANDERSON. I do not know what you asked for before.

Mr. GREELEY. It is an increase over the appropriation of last year, but it is a reduction from what the Forest Service has told Congress from year to year we would probably have to spend.

Mr. ANDERSON. The usual statement of estimates and appropriations under this item appears to have been omitted, so I do not know what the previous estimates have been.

Mr. BYRNES. The note also says that the average has been \$758,000.

Mr. GREELEY. We have spent on an average \$758,000 a year. The theory on which the estimates are presented this year is to make the

expenditures of most of that amount unnecessary. The item as presented includes \$50,000 for continued cooperation with the War Department in the maintenance of an air patrol for the prevention and suppression of forest fires.

Mr. BYRNES. While you say the theory upon which the estimates are based is to enable you to reduce your emergency fund, yet when you transfer this emergency item you also increase it.

Mr. GREELEY. We increase it over the appropriation.

Mr. BYRNES. Over the amount heretofore appropriated.

Mr. GREELEY. Yes; that is because, Mr. Byrnes, as a straight business proposition I do not feel it is safe to face our fire year without an emergency fund of \$350,000 plus the fire patrol.

Mr. ANDERSON. If that is the theory upon which you are going to proceed, the cheapest thing for us to do, apparently, is to cut out all this extra organization and all the extra equipment and everything else, and give you an emergency fire-fighting fund of \$1,000,000 again, and let you use it in case you have to.

Mr. GREELEY. I do not want it in that form, Mr. Anderson. I would rather have one-half of that amount or one-third of that amount with authority to use it without waiting for the emergency to come.

Mr. BYRNES. But you are asking for an increased appropriation in order to make it unnecessary, and then you are asking for an increase in the emergency fund also.

Mr. GREELEY. The point to that, Mr. Byrnes, is that the emergency appropriation has hitherto in almost every year been inadequate, and we have had to come to Congress for a deficiency. What I want to do now is to make a reasonable increase in the standing organization. As I told you shortly ago, out of the increases we have asked for, up and down the line, we propose to use \$592,000 for better fire protection. Now, on top of that we are asking for an emergency appropriation of \$350,000, which would give us an appropriation, assuming that this was all expended, of \$942,000. This is about \$150,000 more than our emergency expenditures alone have amounted to on the average in the past 11 years.

We have continued in this item the amount and the language dealing with the cooperative fire patrol with the Air Service of the War Department exactly as during the past year, except that we have inserted the word "permanent" in connection with the construction of buildings. We have found that the prohibition on the construction of any buildings whatsoever under the expenditure of this \$50,000 has prevented us from doing certain temporary construction of small shelters, buildings for the protection of tools, buildings for the protection of telephone communication, etc., is a serious handicap. We do not propose to go into any permanent construction under this item. We do not propose to build permanent stations or hangers, or anything of that sort, but we do ask for authority to put up temporary shacks, storage sheds, and similar little structures.

The airplane patrol in cooperation with the War Department has given some excellent results. The War Department furnished on the average last year 37 machines and 166 men. These machines worked from four bases in California and from two bases in Oregon.

The War Department was unable to furnish the number of machines and men that would have been required to extend the airplane patrol over other portions of the national forests in the West. We can not yet say that this airplane patrol is the solution of the prompt detection of forest fires, but we can say that it has accomplished enough to thoroughly justify a continuation of the work. It is still somewhat experimental.

The training of the airplane pilots and observers in this particular kind of work can not be accomplished in a single year, and the perfection of communication between the airplanes and the ground under the rugged topographic conditions in the national forests is something that is going to take time to work out, but the airplanes have discovered a good many fires, and in a good many cases they have discovered and reported the fires with excellent accuracy. In other cases, the airplanes have given very efficient service in taking forest officers to determine the exact location of a forest fire, whose existence had previously been known, seeing how big it was, just where it was, just how it could best be fought, where the men and supplies should go in, and at what point the fire should be attacked. In one or two instances of that character a good deal of money was undoubtedly saved, because the airplane made it possible for the supervising officer to get a much better understanding of the whole situation.

We are also working with the War Department in an experimental way to determine to what extent the dirigible air machine can be utilized in forest-fire work with the idea of ascertaining whether a dirigible—as a more stable machine than the airplane, a machine that can carry much greater loads—can be adapted not only to the discovery of forest fires but to the transportation of men and supplies to fires in inaccessible regions. This is still experimental, but with the rapid development in the navigation of the air, I feel that it is thoroughly desirable to continue this work in cooperation with the War Department.

Mr. BYRNES. If it is inaccessible, how is a dirigible going to have a landing place?

Mr. GREELEY. A scheme has been worked out for dropping loads on the ground from dirigibles by wire cables.

Mr. BYRNES. We will have to increase the compensation in order to get men to undertake those risks, will we not?

Mr. GREELEY. There has been no lack of volunteers to date, Mr. Byrnes.

Mr. BYRNES. To go up or to come down on the cable?

Mr. GREELEY. One difficulty has been that too many forest officers want to go up in these air machines.

Mr. ANDERSON. I was just wondering if this was not a good deal of a play proposition?

Mr. GREELEY. It is not a play proposition. If it becomes a play proposition, we will simply have to cut it out. It is a question of the adaptation of the Army airplane organization to this particular job, and to date the results certainly justify its continuance. For example, in Oregon, in the region covered, both inside and outside the national forests, out of a total of 1,013 fires reported by all sources, 70 per cent were reported by the air patrol, and out of that 70 per

cent, 465 fires were first discovered and reported by the air service. Ninety per cent of the fires reported were found to be within one-quarter of a mile of the location as reported by the airplane observers, which shows that they have attained a surprising degree of accuracy in the location of the fires.

In California the results were also very encouraging. The air service reported 772 fires during the summer months in California and a considerable number of them were reported by the air service in advance of the lookouts or the patrol men in the national forests. I feel confident we can make the airplane work a valuable part of our protective organization, and I keep coming back to the wisdom of developing any system or device that is going to help us to eliminate the emergency fire expenditure, because that is the one that makes the biggest drain upon the Treasury, that is the most uneconomical from every standpoint and that buys us the least real protection.

Mr. ANDERSON. How much is the War Department expending on this cooperative activity; do you know?

Mr. GREELEY. I can not answer that question, Mr. Anderson.

FOR PREVENTING AND COMBATING INFESTATION OF INSECTS.

The next item is a new one, No. 68, page 127, for preventing and combating infestations of insects injurious to forest trees on and near the national forests, independently or in cooperation with other branches of the Federal Government, with States, counties, municipalities or with private owners. The problem of preventing serious loss of merchantable timber on the national forests from destructive insects is one that we have had with us for a good many years. The technical study of these destructive insects is conducted by scientists in the Bureau of Entomology and in our methods of combating them we have been guided by their advice. Different species of bark beetles, inhabiting the soft inner bark of forest trees, normally exist more or less widely throughout many timber regions. In their normal condition they are not dangerous. Their natural enemies, particularly birds, take care of them. But, from certain combinations of natural circumstances, periods occur here and there where this normal infestation of bark beetles assumes enormous proportions, increasing in three or four years manyfold in number and destroying enormous quantities of timber. It is one of the destructive pests we have got to be prepared for.

For example, in California in 1917 we found over a comparatively small region in a survey made in cooperation between the Forest Service, the Bureau of Entomology, and the National Park Service that 25,000,000 feet of the choicest pine timber of the State had been killed in a single year. A little work on that infestation at the right time could have saved the greater part of that loss. The surveys which have been made indicate that we are probably losing 137,000,000 feet of timber yearly by insect outbreaks at one point or another, and at the average price we are getting from timber sales this loss from the work of the bugs represents close to \$1,000,000 a year. We are anxious to have a small sum, which we will use, not in any attempt to clean up all of the bug-infested trees in the national forests, which would be impossible and unnecessary, but to jump

in wherever a dangerous outbreak is threatening and to employ two or three men who know enough entomology to detect the signs of serious insect menaces and to locate where serious infestations are taking place. In other words, we should be prepared to jump on these small infestations when they become dangerous, just as we are prepared to jump on a forest fire while it is still small.

The work we have done hitherto in combating insect depredations has necessarily been carried on from the fund for fighting fires and other emergencies. There is no other fund available for it. It has been impossible to allot money from the emergency appropriation at the time of the year when bug work should be done because of the necessity of keeping that money in reserve for the possibility of a bad fire season, that has handicapped the handling of this insect problem. We have to-day reports of threatened insect infestations in four different regions, one of them in southwestern Colorado, the second in California, the third in eastern Oregon, and the fourth in northern Arizona in the vicinity of the Grand Canyon National Park. There the Park Service is anxious to have us join with them in an effort to control a threatened outbreak of bark beetles, which would seriously injure the pine forests, both in the national park and in the adjoining national forest.

Mr. BYRNES. Do you ever call upon the Bureau of Entomology to help you in these matters?

Mr. GREELEY. Yes; the Bureau of Entomology has prospected many of these areas and has furnished us with technical help and suggestions. Its field men have often taken charge of these jobs of bringing the insects in a particular region under control. The Bureau of Entomology is the technical bureau that tells us how to do it, but they have no funds which they can use to go in and clean up several sections of forests, for example.

Mr. BYRNES. I notice they are asking for an appropriation of \$15,000 for investigation of insects affecting forest trees. That would be used only for purposes of investigation.

Mr. GREELEY. Yes, sir; the Bureau of Entomology handles only the investigational work——

Mr. ANDERSON (interposing). No.

Mr. GREELEY. Except as they cooperate with other people.

Mr. ANDERSON. There is a little allotment for the Bureau of Entomology right here in this \$25,000 item.

Mr. BYRNES. The language is very much like the statement you have just made in which they ask for this additional appropriation of \$150,000; they say it is necessary to protect the trees in the forests.

Mr. GREELEY. There is a very clear distinction between the functions of the two bureaus.

Mr. BYRNES. I judge from what you say that the distinction is that they go to the forests and make investigations and tell you the cause and how it can be remedied and you want an appropriation to follow their directions in remedying it?

Mr. GREELEY. That is it.

I do not like to let the chairman's suggestion pass that what we contemplate is a little bureau of entomology.

Mr. ANDERSON. You do not contemplate it now, but I have observed the growth of these things for some years and I am speaking from hindsight rather than foresight.

Mr. GREELEY. The Bureau of Entomology is the one that should do the investigative work and we have no intention of trespassing upon their domain. They have stations in the timbered portions of the West where these various bugs are studied, the life history of the insect worked out, and the best method of combating the bugs is determined.

Mr. BYRNES. You have no fund to spend at all in carrying out their instructions?

Mr. GREELEY. The only fund we have is this emergency item.

Mr. BYRNES. How would you go about doing it? Can not you use some of the men employed looking for fires on a day when no fire is in sight—might not they engage a little while in carrying out the instructions issued as a result of the investigations made by the Bureau of Entomology?

Mr. GREELEY. We can use the available time of the rangers and guards for insect work to some extent, and a lot of it has been done that way. But where you have a threatened infestation that you have to control during the two or three months while the insects are swarming you have to have an organized crew and put in a camp with six or a dozen men to clean up the infested trees in that area. In every case where we have handled such work we have drawn upon our permanent rangers and other men to some extent, but you have got to employ temporary labor and buy supplies for them.

It is impossible to do that on an adequate scale without some form of emergency appropriation available or a special appropriation. The emergency appropriations have not been available hitherto, for with the danger of a bad fire season always staring us in the face, Col. Graves, I know, never felt it was wise to allot that emergency money for insect work. I am in exactly the same situation. We have these four threatening situations now, and the National Park Service is calling upon us for help. But with the experience we have had with bad fire years, I can not use the money out of this fire emergency fund for that work and then have to come to Congress later on and ask for a deficiency. That is the situation.

Mr. BYRNES. We understand that situation.

Mr. ANDERSON. You may proceed.

FOR SELECTION, ETC., OF LANDS WITHIN BOUNDARIES OF NATIONAL FORESTS.

Mr. GREELEY. The next item, No. 69, is for the selection, classification, and segregation of lands within the boundaries of national forests, and I am going to ask the associate forester, Mr. Sherman, to cover that, since that work has been under his direction from its inception.

Mr. ANDERSON. Very well.

Mr. SHERMAN. This item is for the purpose of carrying on three lines of work, which are very closely associated, two of them being very closely interwoven indeed. The first is the selection and classification of lands within the boundaries of national forests that may be opened to homestead settlement and entry under the homestead laws applicable to the national forests. That is, lands chiefly valuable for agriculture. The second line of work is for the survey of

these lands into homesteads so that title may pass from the Government to the homesteaders. The third line of work is for the examination of lands in effecting exchanges authorized by law. The first, the selection of agricultural lands, is a line of work which we have been carrying on now for nearly 10 years, examining and classifying agricultural lands within the national forests. This appropriation which we are asking for the coming fiscal year is identical in amount with the sum which we have for the current fiscal year, \$87,000.

Mr. BYRNES. Will that work ever be completed or is it a continuing service?

Mr. SHERMAN. The work of classification is now about 90 per cent completed. The work of classification as such will never be entirely completed, because there are always questions coming up and changes in economic conditions. Lands that one time were thought not to be agricultural later may be found to be agricultural; new markets will spring up and new crops found to be possible in a region where it was not possible before. We will always have some of this work to do. About 90 per cent of that work has now been completed, at a cost of approximately one-half cent per acre. The work in the continental United States, outside of Alaska, is pretty well completed. The remaining portion of the work is in Alaska and in certain specific projects in the various public-land States that offer very difficult problems of solution or where there are differences of opinion as to the value of the lands.

The amount to be expended on land classification from this fund during the coming fiscal year is \$25,000. A larger amount, or \$37,000, will be expended in the survey of homesteads after the land has been examined and classified. Much of it is found to be in remote regions that have not yet been covered by the public-lands survey. In order that the settler may file upon the land and make final proof and secure patent it is necessary for the Government to survey it, in order that the Land Office may pass patent.

All surveys are made by the Government at Government expense, by metes and bounds, as being the cheaper way to get into private hands isolated tracts lying in mountains rather than to extend the public-land survey over the entire region. This work follows the classification, so that it will take a longer period than the classification work. The classification work primarily should be completed within four years and the entry survey works should be completed within two years after that; but, as I say, even after that there will be occasional cases coming up from time to time. That even applies in older regions or settled territories where the lands at one time were forested and later on it appears better to devote them to agriculture.

NUMBER OF ACRES OF PRIVATELY OWNED LAND.

The third line of work carried on under this item is for the examination of lands in the consummation of exchanges authorized by law. There are about 24,000,000 acres of privately owned land within the national forests, the title to which is held in adverse possession by States, railroad companies, settlers, lumber companies, speculators, and others, and a great deal of this land is primarily forest

land intermingled with Government holdings. In many cases it is exceedingly desirable to consolidate and to make exchanges with the private owner so that the Government land may be consolidated in blocks and the private owners' land also consolidated, where it will not affect us so adversely. A considerable number of acts have been passed by Congress authorizing exchanges of this kind, and when such an exchange is authorized the expense of examination is defrayed from this fund; \$25,000 of this fund will be used for that purpose. A considerable amount of it is used in effecting exchanges with the States where they have sections 16 and 36 lying within the national forests and where it is desirable to effect a consolidation so that they can have their land in a solid body.

Mr. BYRNES. How much will you spend this year, this fiscal year?

Mr. SHERMAN. \$25,000.

Mr. BYRNES. Is that spent in the employment of a certain number of men?

Mr. SHERMAN. It is spent in the employment of men.

Mr. BYRNES. And the employment of these men consumes the \$25,000?

Mr. SHERMAN. Yes, sir.

Mr. BYRNES. And you propose to carry the same number of men next year?

Mr. SHERMAN. To carry on the work under the various laws which Congress has made.

I do not know that there is anything further which need be said about this item.

Mr. ANDERSON. Take up the next item.

FOR PURCHASE AND MAINTENANCE OF FIELD, OFFICE, AND LABORATORY SUPPLIES, ETC.

Mr. GREELEY. The next item on page 129, No. 70, "For the purchase and maintenance of necessary field, office, and laboratory supplies, instruments and equipments," provides an increase of \$25,000. This item has remained stationary since 1917. In the meantime the cost of supplies has advanced on an average, taking that class of supplies required by the Forest Service, not less than 50 per cent.

Mr. BYRNES. What amount have you in this fund to-day?

Mr. GREELEY. \$150,000.

Mr. BYRNES. How much has been spent up to this time?

Mr. GREELEY. I can not tell offhand.

Mr. HEADLEY. It is all obligated during the remainder of the year for stationery, furniture, etc.

Mr. BYRNES. Have you asked for a deficiency?

Mr. GREELEY. No, sir.

Mr. BYRNES. You expect to get through with \$150,000 this year. Do you expect that supplies will be higher during the year beginning July 1 than they are at present?

Mr. GREELEY. We are getting through this year only by cutting out a great many purchases which are necessary and by practically exhausting all the stocks. At the expiration of this fiscal year we will be in a situation where we will either need an increase in our appropriation or a very large drop in the cost of standard supplies

and equipments in order to obtain what we require. That is the situation. We are asking for an increase of 16½ per cent to take care of the increased cost, and also some increase in the quantity of supplies. These supplies are very largely purchased from the standard lists of the Government, such as stationery, office supplies, etc. We are exercising economy at the present time to the point where it is being felt seriously in our ability to carry on the work as we should. That increase is essential, as far as we can forecast the probable cost of these classes of material in the future. Many of our field offices at present are inadequately equipped and stocks are practically gone.

Mr. ANDERSON. Take up the next item.

FOR INVESTIGATIONS OF METHODS FOR WOOD DISTILLATION, ETC.

Mr. GREELEY. The next item, No. 71, appears on the same page. "For investigations of methods for wood distillation," etc., covering the research work of the Forest Service dealing with forest products. This is the item under which the forest-products laboratory at Madison, Wis., is maintained, and the greater part of the appropriation is devoted to the investigative work at that laboratory. The forest-products laboratory is primarily to carry on all the more intensive research work dealing with economy in the use of wood and the improvements in the various processes of manufacturing products out of wood as a raw material.

In addition to the laboratory, we maintain a very few experts in forest products who are attached to our district headquarters to work on research of special importance to the wood-using industries in their regions and also to help in the best utilization of timber and timber waste in connection with operations in the national forests. In those western forest regions the waste of material in logging operations is still enormous. It is a part of the general economic situation in that country. While we are setting just as high a standard of utilization in the national forest sales as possible, there is still a great deal of material which is not being utilized, and a few experts in forest products are assigned to the district offices to work primarily on that problem.

The increase requested in this item is \$176,740. We propose to expend that additional amount mainly at the forest-products laboratory at Madison, Wis.; and I want to ask Assistant Forester E. H. Clapp to discuss the use of that fund with you, since that is his work and he is more familiar with it than I am.

Mr. ANDERSON. Very well.

Mr. CLAPP. The new work which we want to emphasize most is on the various problems connected with waste in the logging, manufacturing, and use of wood. We know, in a general way, that at the present time something like two-thirds of the tree is wasted in reaching the stage of unplanned seasoned lumber.

Mr. ANDERSON. What do you mean by wasted?

Mr. CLAPP. Some of it is left in the woods. Another part goes into the burner at the sawmill.

Mr. ANDERSON. That is not wasted?

Mr. CLAPP. Some of it is.

Mr. GREELEY. You do not mean where it is burned for fuel?

Mr. CLAPP. No, sir; I mean the stuff which goes into the burner from which no service whatever is derived. In fact, through every process of manufacture there is a further great loss of material beyond the stage where lumber is produced—in making such articles as furniture, vehicles, etc. The waste runs anywhere from 5 to 10 per cent, and in extreme cases as high as 50 per cent. What we want to do is to attack this whole problem of waste systematically, beginning with the woods and carrying the work right on down through the various stages of logging, milling, seasoning, etc. We want to know more definitely the character and quality of the waste in the various processes for comparison with the requirements of industries which might use it, so as to bring different industries together and permit closer utilization of the raw material. We want, if possible, to bring to bear upon the waste problem the results of all the work we have done in the past 10 or 15 years.

As an example of what we want to work out, is the present practice of some industries which use wood purchased in lumber form and of other similar industries purchasing it in what is called dimension material, material cut at the sawmill to the sizes in which it is manufactured. If we are able to draw the most effective line between these two forms in different industries, there is great possibility of decreasing waste.

The various industries which I have referred to use the wood in an unchanged form, as wood. There is a further opportunity for utilization in the chemical processes in which there are great possibilities of using to a much greater extent material which is now wasted. Pulp and paper manufacture is a chemical process in which only about 50 per cent of the original volume of the pulp wood is utilized. Preliminary investigations have indicated the possibility of utilizing a much larger proportion. We have made an investigation on a small scale as to the use of waste material from western white pine for stock food. Sawdust is changed by a chemical process into crude sugars, and the preliminary feeding tests have given very good results.

Mr. ANDERSON. I have always suspected that some of the stock feeders were feeding the stock sawdust, but I did not believe that the Agricultural Department was helping them.

Mr. CLAPP. Those tests were carried out in cooperation with the stock experts of the University of Wisconsin, and so there were experts on stock feeding to check the results.

Mr. ANDERSON. Do you think that there is any prospect of feeding sawdust as cow feed?

Mr. CLAPP. The tests so far made are very encouraging. They are being repeated on a larger scale for a longer period as a check.

Mr. BYRNES. Where are the experiments being conducted besides the university?

Mr. CLAPP. The stock-feeding tests?

Mr. BYRNES. Yes, sir.

Mr. CLAPP. Only at the university. Only one small test has been made. Another one has been started and is under way.

Mr. BYRNES. That would indicate that notwithstanding what you expected to do to the cow she survived. You have only tested one cow?

Mr. CLAPP. No, sir: several were fed in the first test.

Mr. ANDERSON. How much does it cost to produce this stock feed?

Mr. CLAPP. As to that we have only estimates based on the laboratory work, but it may be possible to produce the stock feed at a cost, including everything, at about \$10 a ton. This material is a substitute for grain.

Mr. GREELEY. That is not sawdust, it is sugar made from the sawdust?

Mr. CLAPP. Yes, sir: sugar made from the sawdust.

Mr. GREELEY. It is a by-product by a chemical process which leaves a crude sugar.

Mr. CLAPP. The shortage of gasoline emphasizes the possibility of the further utilization of wood waste in the manufacture of ethyl or grain alcohol. The process there is similar. The wood or sawdust is converted into sugar and the sugar is fermented.

Mr. ANDERSON. We have known for a long time that you could make alcohol out of potatoes and other farm waste. Various plans have been proposed for making that a commercial proposition but none of them have apparently succeeded, and I confess I do not see very much in this unless you can at the same time reorganize the whole automotive industry of the country.

Mr. CLAPP. Ethyl alcohol has been used as a motor fuel successfully, I understand, in pure form and in mixture with gasoline.

Mr. ANDERSON. I think it is true that types of motors, more or less satisfactory, have been worked out that will use alcohol, but it has not been sufficiently practicable to extend the use of alcohol in internal-explosive engines to any considerable extent.

Mr. CLAPP. It has been, partly, a question of price; gasoline has been cheaper. The possibility of the chemical utilization of wood waste in paper and pulp, as well as the various other things which I have mentioned merely as examples, may be greater than the possibility of the mechanical utilization of wood as an unchanged material. We ought to know a whole lot more than we do about the chemistry of wood and the various substances which make up wood and this may serve as one important key to much more complete utilization.

Particularly during the last year the calls for assistance from the Forest Products Laboratory have increased very materially. The letters of inquiry received at the laboratory at the present time run about 2,700 per month; some of these letters require a good deal of effort to answer; they are based on the troubles and difficulties of manufacturing concerns, and from the replies must be worked out the processes and practices of the person who makes the inquiry. In addition to this, the number of visitors who come to the laboratory for specific information and help is very large. In order to cut down the demands upon our resources we have tried to have men interested in similar lines come in groups, so that we could give them the maximum help with the least effort on our part. Taking it altogether, fully 50 per cent of the the time of our entire technical staff is devoted to helping out wood users who write or come to the laboratory for help. This is an indication of the value of the work to the public and to wood-using industries, but it also cuts down a good deal the amount of new work which we are able to do.

One reason for asking an increase is to make it possible to continue our regular investigative program on a normal scale.

Mr. ANDERSON. As far as you can, indicate what you want to use this \$176,000 for. Is it just a general guess about the extent to which you can increase your activities?

Mr. CLAPP. For industrial investigations, including primarily studies of the waste problem, we would allot \$50,000; for continuing our work on pulp and paper investigations along such lines as investigation of the waste through decay of pulp wood and wood pulp, where there are now very great losses, we would allot \$20,000.

Mr. ANDERSON. There are more losses and decay going on in the forests than anywhere else—twenty times over. I do not see much advantage in saving a few pieces of timber around the country when waste on an enormous scale is going on in the forests themselves.

Mr. GREELEY. There is a great deal of advantage in saving a valuable manufactured product like wood pulp after it has been produced at a cost of perhaps \$40 or \$50 a ton and then deteriorates through various forms of decay; at least the advantage is such that the manufacturers of those products are not only anxious to have the Government take up their study, but are willing to put up considerable funds of their own on a cooperative basis in order to help carry the project out. Of course the decay in the forests is a mighty important item, and that is one reason why we want to increase our timber-sale business—to cut over some of these old stands where decay is taking place.

Mr. CLAPP. For various studies of the chemical utilization of wood, such as the manufacture of ethyl alcohol, wood distillation, etc., \$20,000; for strength tests of timber, including the tests of large columns, on which at the present time we have practically no information, tests of containers and boxes on which at the present time the losses in shipments run from \$25,000,000 to \$100,000,000 a year and steam-bending tests of wood, \$30,000; for kiln-drying tests, particularly of the woods which are difficult to dry and on which the losses in drying are very large, \$15,000; for wood preservation, \$20,000. As an example of the work proposed under the latter item I will cite what has been happening in San Francisco Bay, where the losses in piling from the teredo and other marine borers are running into hundreds of thousands of dollars. Methods of rendering piling proof from marine borers have yet to be worked out. Another important problem is the development of methods and substances which will make wood more fire resistant; \$21,740 of the increase asked for will be used for forest products investigations in our field districts.

Mr. GREELEY. I would like to say that the question of these investigations in forest products is simply one of how rapidly Congress wishes to have the Forest Service go. We have presented this estimate to you on the basis of the work which is being shoved at us and the problems that the manufacturers of wood are asking us to solve.

Mr. ANDERSON. I do not think anybody has asked you to find a way to turn sawdust into cow feed.

Mr. GREELEY. That proposition came up as a means of utilizing a by-product in the manufacture of one of the chemical products of

wood, and the live-stock experts at the University of Wisconsin thought it sufficiently worth while to justify some further experimentation. However, in itself it is a very small item. The big problems on which the bulk of our appropriation is used are those bearing directly upon the waste in the various processes of commercial utilization. The estimates we are putting up are based on the work that the forest-using industries are urging us to do. Conservation of wood in manufacturing processes is a very important phase of the whole timber supply situation and should be encouraged by the Government in every practicable way.

FOR DEVELOPMENT AND IMPROVEMENT OF THE RECREATIONAL RESOURCES,
ETC.

The next is item 72, page 132, "For the development and improvement of the recreational resources of the national forests, including the protection and propagation of fish and game, \$50,000." That is a new item and represent a line of work which hitherto we have been able to do very little with, but which we feel should be definitely and systematically undertaken on its own merits. I am going to ask Mr. Sherman to speak on that item, as he is particularly familiar with the subject.

Mr. SHERMAN. The act of June 4, 1897, creating the national forests, provides that they shall be open to the public for all lawful purposes. The public-land laws provide for roads and trails within the national forests to the extent that the counties and States have a right to construct roads for travel wherever their needs and demands may take them. In addition to this, Congress passed a special provision authorizing the Forest Service to issue permits or leases for summer homes and other recreational purposes, for periods not exceeding 30 years and embracing areas of not to exceed 5 acres in any one case. Under this law over 3,700 permits have been issued. Our receipts already from summer homes alone are annually in excess of \$50,00.

The travel through the West, increased largely through the use of the automobile, has brought into the national forests a great crowd of people that must be reckoned with in our administration. The increase in travel within the national forests has amounted during the last 10 years to over 200 per cent. The total number of people visiting the national forests during the last fiscal year, including campers, amounted to 6,841,000. In some places this travel is very intensive and the recreational use of many parts of the forests is very heavy. It is becoming necessary, in the interest of common decency and sanitation, to make arrangements for handling these people and to provide simple public-comfort stations and things of that sort, in order that the national forests will not become an offense and a menace to public health. Just within the past week a gentleman from the West, who has a summer home in one of the national forest near Hot Springs, came into my office.

The town people, at public expense, have put in a pool that is free to the public, and he stated that on different days last year there had been as high as 800 automobiles there. The people crowded in, but there was no provision for taking care of them. The Forest Service

and no funds for that purpose, and he was compelled to use his own workmen for erecting public toilets, so that the public would have some chance at ordinary decency.

We have found, in addition, that it is necessary to take care of these places as a matter of fire protection; that if we can guide and control the travel somewhat it will reduce the fire hazard; that if instead of having people go in a haphazard way to all parts of the forests and camp, we can locate certain choice camping grounds, put in simple improvements in the way of fire places, where they can build their camp fires, and a few simple sanitary conveniences, the fire hazard will be greatly reduced. Instead of scattering into more remote places and building dangerous camp fires, as inexperienced people are likely to do, they will stop at those improved spots and thus greatly decrease the danger of destructive fires.

The Forest Service has been forced into the recreation business as a means of taking care of the public. It has been thrust upon us through visitors who have come to the forests and told their friends about them, and through increased travel, until each forest supervisor and ranger is constantly receiving inquiries from people who wish to visit the national forests. We have found, in order to handle this business, that it is simpler and easier to have printed instructions and directions. The only way we could avoid this would be to make it unlawful for the public to enter the national forests, provide a penalty for it, and enforce the penalty. This I do not feel is desirable; on the other hand, I feel that it is desirable to encourage people to use the national forests, like the national parks, and make reasonable provision for them.

The fund that is estimated for would be used in part for the preparation of camp plans and the simple construction necessary for sanitation and fire protection. The classes of people it would serve would be the automobile tourists, summer campers, hunters and fishermen, the summer residents, and in addition many semi-public service organizations, such as health camps, municipal camps, sanatoria, clubs, hotels, and the like. The development work that is required would be the clearing of ground by the removal of the brush and grading, so that there would be parking places for automobiles; the subdivision of different areas into lots for rental; their survey into divisions, blocks, lots, and camping grounds; the construction of roads, trails, bridges, and fords in these particular recreation areas, and in some cases the development of sources of water supply, and the installation of facilities for service and sanitation, such as fireplaces, refuse depositories, latrines, tables, and benches.

The benefit that the Government gets out of this is reduced fire hazard; the greater ease of administration of the national forests; the larger public benefits resulting from more people using the national forests for health and recreation; and last, but not least, the largely increased revenue from rentals of lands for camps, sanatoria, hotels, clubs, and summer homes. This is a business proposition that will pay for itself in increased rentals while at the same time furnishing a large by-product of public service. This will require the employment of a few men trained in work of this kind, such as recreation engineers, men who have had a basic training in landscape engineering and who have had experience in the management of municipal

camps or parks, city planning, and the like. The need for work of this kind has been so urgent that the Forest Service has employed one such man who for the past two years, has been stationed at Denver, and his work has been done in Colorado and Wyoming. The demands upon his time for the layout of summer homes and municipal camps—

Mr. ANDERSON (interposing). Do you mean to say you will lay out summer homes for these people, furnish them with plans, and all that sort of thing?

Mr. SHERMAN. To this extent: If there is an area that appears to be desirable for summer home purposes, instead of letting a man go in and select five acres wherever he chooses, and perhaps spoil a half dozen different sites, we have found it is more desirable to lay out the lots in advance, following the configuration of the ground and laying out the roads.

Mr. ANDERSON. You talk about this being a business proposition, but it does not look so to me. To let people come in and take five acres for a rental of from \$5 to \$25 looks like charity business to me, and not like a business proposition.

Mr. SHERMAN. The minimum price is \$5 and the maximum price for a summer home is \$25. I will take the Angeles Forest as an example, where the average area instead of being 5 acres has been a quarter of an acre, and the average rental runs about \$15, so that our return for land of that kind has run pretty high. It is a good source of revenue for the reason that it is continuous; the rental is paid every year, and practically the only cost is the initial cost of issuing the permit and surveying the lot. Following that there is a continuous return during the term of the permit; where a man gets his permit for a definite length of time the minimum charge is \$10 and the maximum charge is \$25. A good many people have complained at the \$25 charge for small areas, but we have felt that it was reasonable, and at those prices we have been getting a greatly increased business.

A limited part of the fund will also be used for planting streams with fish fry obtained from State or Federal hatcheries, for distributing valuable game animals from regions where there is a surplus to areas where game has been depleted, and for assisting the States, in accordance with Federal law, in the enforcement of game regulations.

Mr. ANDERSON. I suppose it is a condition and not a theory that confronts us here, but I must confess I have some doubt about the public policy of building up two sets of recreational places in the country, and possibly three. The Forest Service is duplicating practically everything there is in the national parks and specializing in promoting competing projects, I am told.

Mr. SHERMAN. As long as we have national forests people will want to come and see them even though there are national parks. A great part of this is local travel of a kind that would not reach the national parks. It is the public we have with us, and the only way they can be excluded would be to forbid their entering the forests.

Mr. ANDERSON. Is there anything further on this item?

Mr. GREELEY. May I add a word, Mr. Chairman. It does not seem to me there is any competition involved between the national

forests and the national parks or any inconsistency in developing the recreational service that each bureau can properly render. We have large areas of attractive forests, lakes, and mountains; the people are coming there in enormous numbers and they bring with them a greatly increased fire hazard. Now, it is our problem to take care of that situation. More than that, I feel that the national forests can render a distinct benefit to the country through providing opportunities for recreation. While it is a problem that is coming to us, whether we want it or not, I think it is something we ought to meet half way, and we ought to meet it along the line that will make the national forests give as large service to the people who want to use them as we can.

Now, I know the question of our publications dealing with recreation has come up and that the Forest Service has been subject to certain criticism for the amount of material which we have published dealing with this subject. I would like to make a brief statement on that, because I want the committee to know the actual facts. These throngs of people are coming to the national forests anyway. It is our problem to handle this recreational development so that we can control the fire hazard as effectively as possible and at the same time establish the right relations with the people who come to visit the national forests and spend a few days or a few weeks on them. We have got to meet this situation in a human way. We have got to use principles of ordinary business in establishing the right contact with these people. We want them to be there as our friends, as helpers. Instead of starting more forest fires we want them to help us put out fires that do get started, and, as a matter of fact, that often happens. It has been our policy to recognize this recreational use of the national forests as something that was bound to come, and to make the most of it; to make it an opportunity instead of something that we are dreading and trying to ward off. We have published a certain amount of material dealing with recreational opportunities on the national forests in order to establish a friendly, cooperative relationship with these people who are coming to us and in order to get into their minds at the outset the necessity of caution in regard to forest fires. During the past 18 months the Forest Service has gotten out 12 publications dealing with recreational opportunities on particular national forests or on all of the national forests in a particular State. Most of these publications contain some simple little map. Here is a sample of these publications dealing with the recreational opportunities in the national forests in California. This particular sample has been marked to show the airplane routes, but the basic idea is to furnish a map showing the national forests, the principal roads and trails as a means of reaching them, good fishing and camping spots, etc.

Mr. ANDERSON. The gentlemen who talked to me about that particular matter, I think, referred to the great care with which the Forest Service had omitted putting on the map the national parks or other recreational activities of the Government.

Mr. GREELEY. They are all marked on this map, Mr. Chairman.

Mr. ANDERSON. I am not sure it was that map, but it was a map of California.

Mr. GREELEY. I assure you we have no desire to slight the recreational opportunities offered by the national parks, because we are

pretty much national-park enthusiasts ourselves. Now, on the reverse side we give the sort of information that a mountain traveler would like to have. We tell him about rations, about camp equipment, about the sort of clothing to carry into the mountains with him, and then we run right in with that the necessity for precaution in forest fires and give him the essential rules that we ask all our campers to observe in order to prevent fires getting out. We give them a picture, like this, of a forest fire in progress and we give them another picture, like this, showing a forest after it has been burned, to try to get into the minds of these people the necessity of precaution with forest fires, and to make every one of them an auxiliary forest guard instead of a possible firebug. That is the line of attack we are following.

Now, as I said, in the last 18 months we have gotten out 12 publications of that character. The editions have been small, the average edition being about 13,000 copies. The total cost of the 12 publications within the last year and a half was \$7,706. The average cost per copy of the whole lot has been just about 5 cents. Now, for a year and a half, that represents the publication activities of the Forest Service dealing with the question of recreation on the national forests—\$7,706 worth of publications of this character at an average cost of 5 cents per copy.

Mr. ANDERSON. Does that include the cost of printing?

Mr. GREELEY. This is the printing cost that I am giving you. The national parks have their growing recreational use which is distinctive. It is specialized and it attracts the people who wish to see the very best among our national wonders and beauties. Their recreational work should obviously be liberally provided for, but I can not see that there is any competition in also making provision for the proper and decent care of the millions of people who are going to come to the national forests anyway. As a straight social problem I believe that the best way to get these people to help us in this important matter of fire hazard is to meet them on their own ground and tell them what we have got; tell them where the good fishing is, as our maps do; tell them where the good camping grounds are, as our maps do; establish pleasant relations with them in that way, and then ask every one of them to make himself an auxiliary forest guard. That, at least, is our theory of meeting this whole proposition, and I want to assure you, as far as I have figured the matter out, there is no question of competition with the national parks involved. It is simply a meeting of our own problems.

Mr. ANDERSON. Take up the next item.

FOR EXPERIMENTS AND INVESTIGATIONS OF RANGE CONDITIONS.

Mr. GREELEY. The next item, No. 73, on page 132, "For experiments and investigations of range conditions within the national forests or elsewhere on the public range, etc.," the language being the same as in past appropriations, calls for an increase of \$35,000, from \$35,000 to \$70,000. I am going to ask Mr. W. C. Barnes, who is in charge of the grazing work of the Forest Service and a practical stockman, to discuss this item.

Mr. BARNES. I might refer just for an instant, Mr. Chairman, being an old stockman, to the question of feeding sawdust. I do

not know whether you have read Elbert Hubbard's story about the farmer who economized by feeding his chickens sawdust and it worked out beautifully until he hatched out some eggs and got six red headed woodpeckers. I think the discovery of sugar in sawdust is no more wonderful than the discovery 30 years ago that cottonseed hulls were a proper stock food, and I really think the stockmen are interested in the production of any new and successful stock food. We only discovered the use of molasses 10 years ago in feeding, and now it is a very favored food, so it seems as if there is some justification for experimenting in developing sugar out of sawdust. I am looking at it entirely from the point of view of a stockman.

Going into the question of range investigations, which as Col. Greeley has explained, calls for an increase of \$35,000 over last year's appropriation, I might say right at the beginning that we have no forest in the live stock sections on which the demand for grazing privileges does not exceed the supply of range that we have to offer. Range investigations cover the best management of the ranges, the possibility of a better distribution of the stock, increasing the number of stock grazed, and the better handling of it with a view not only to grazing more and getting a bigger income, but also turning off fatter and heavier stock, and stock of a better grade.

We have initiated studies in handling sheep which have improved the amount of wool grown, the weight of the wool, and the weight of the lambs very materially, just by finding out that certain ranges were better adapted for sheep grazing than any other purpose. We found they should be grazed at certain seasons of the summer whereas they should be left to grow in other seasons until the feed was matured. The same way with cattle; we found that certain ranges that the cattle were occupying were infested with larkspur, and we learned that we should keep the cattle off until the larkspur had become ripe, or reached a certain period in its life, and then it was harmless. In that way we have increased the number of stock very materially on all the national forests.

Take for a shining example, in Arizona, our Coconino National Forest: We have a large area of bunch grass which neither cattle nor sheep seemed to like, and the range was unoccupied. We found that by building drift fences in there, which the stockmen themselves put up the money for, we could hold the cattle on that range until they had utilized the feed to their distinct advantage, and we increased the amount of cattle on the range by about 12,000 head.

We have put into effect a number of studies of that kind, every one of which has brought positive results. For instance, take the question of water supply. Nearly all the ranges in the Southwest are short of water. By studying the problem of getting water on the ranges we have been able to develop springs, pipe them out to points where the cattle could reach them, and in that way bring into use ranges which were either understocked or which were not used at all. Then, we are carrying on important investigations on fenced ranges, one in southern New Mexico and one in southern Arizona, which were established originally by the Bureau of Plant Industry to carry on experiments. We have developed them until now we are handling about 5,000 head of cattle on one and about 2,000 on the other, and I know I am right in saying that the stockmen are watch-

ing these experiments with the deepest interest, because we have developed plans for handling the cattle, for providing feed against drought seasons, and for carrying the cattle in such ways that in the event of a drought the number can be cut down without very much loss to the stockmen. We have increased the calf crop and increased the weight of the animals very materially. All of these things are of distinct value to the stock-raising industry of the West.

We have made six or seven hundred experiments in reseeding the ranges, which the stockmen almost universally believed could be done. It is the commonest thing to get letters from stockmen asking why we do not plant seeds on the range and restock them artificially. We carried on six or seven hundred experiments for two or three years, until we found that it was not practicable; that nature itself would restock the ranges if we handled them aright. We are now able to tell the stockmen that as far as we have examined into the thing there is no profit in sowing ordinary seeds on the public ranges: that it can not be done successfully; the ranges will reseed themselves, provided we keep the stock off until they have reached the seeding stage, and thus we will gradually get the ranges back to their original condition and make them carry a much larger number of cattle.

As I have said, the demand for our ranges is very great. On one Utah forest last year we had several hundred applications from small stockmen and farmers in the vicinity of the forest, each one of whom wanted to graze from one to six or seven head of cattle. We were not able to care for them, because we felt the range was stocked to its full capacity at that time. We have made no intensive study of that particular forest sufficient to know whether it is carrying the number of stock it should or not. This appropriation is for such range investigations, carried on by young men who are expert botanists, who have been farmer boys and understand the value of feed and know more or less about live stock. It is these studies and investigations that enable us to distribute the stock better, manage the ranges better, and graze larger numbers.

Mr. BYRNES. The increased amount you propose to spend in employing additional men?

Mr. BARNES. For the Great Basin Station in Utah, which was established for the purpose of studying these range problems, we have asked for an increase of \$1,800. That work has grown by leaps and bounds. The stockmen are unanimous in asking us to carry on more experiments and to study more problems that they are having to meet and we have asked for an increase of \$1,800. That is to give us clerical and other assistance in the office in recording the studies. At the Jornada Range Station, in southern New Mexico, we are asking for \$13,820, which is an increase of \$3,150 over last year. That is a range of about 200,000 fenced acres where we have the 5,000 head of cattle that I spoke of. These studies are tremendously important to the stockmen in the whole Southwest because they come there with their everyday problems. On general grazing studies and range investigations on all the forests we have asked this year for \$38,420, which is an increase of \$30,000 over last year.

Mr. BYRNES. What I am driving at is, the increased amount is to be spent in employing additional men?

Mr. BARNES. Yes, sir; additional men.

FOR PURCHASE OF TREE SEED, ETC., FOR SEEDING AND PLANTING.

Mr. ANDERSON. Take up the next item.

Mr. GREELEY. The next item, No. 74, on page 133, is the one which covers tree planting on the national forests. The apparent increase is \$50,000 over the past year. The actual increase is \$45,000, since we propose to transfer to this item a fund of \$5,000 hitherto carried under the Nebraska National Forest for the purpose of authorizing rather providing for the extension of nursery operations and tree planting to the Niobrara division of the Nebraska National Forest. We have also transferred to this item general language which has heretofore been carried in another section of the bill which authorizes the free distribution of young trees from the forest nursery in the Nebraska National Forest to settlers in the Kinkaid district, so named under a former land act authorizing an increase in the area of homesteads in a portion of Nebraska. That is long standing legislation which we propose to incorporate here under the tree-planting item and by inserting the word "hereafter," make it continuing legislation.

Mr. BYRNES. Exactly what is done under that?

Mr. GREELEY. Under this provision of the law we receive applications from settlers and distribute a limited amount of free planting material to them within that district. That is the only instance where planting stock is furnished by the Forest Service. The rest of it is all used on our own forest area. As to tree planting on the national forests, I shall ask Mr. Carter, the assistant forester in charge of that line of work, to discuss that item.

Mr. CARTER. Mr. Chairman, for many years the appropriation for planting activities on the national forests stood at \$165,640. During the war that appropriation was reduced to \$145,640 by the appropriation bill for the fiscal year 1919, since we received instructions to practice temporary economies in every possible way. A year ago we asked to have the appropriation restored to its prewar total, but Congress saw fit to cut it a further \$25,000.

Mr. ANDERSON. Are you not in error about having asked to have it restored? You asked to have it continued, but not restored, according to the figures we have here.

Mr. CARTER. We asked to have it continued at \$145,000.

Mr. ANDERSON. Yes.

Mr. CARTER. In the meanwhile, as a result of the cuts, especially the cut last year, we have had to give up work in three States—New Mexico, Utah, and California—and have had to reduce our work at other nurseries. The reduction at other nurseries has been due to the increased cost, especially of ordinary labor. Labor that could be had for \$2 a day before the war now costs us anywhere from \$3.50 to \$4, or did at the last planting season. We have not had to reduce our work as yet in proportion to the increased cost of operation and reduced appropriation, because we had in our nurseries trees which had been started before the price of labor went up.

We are now asking to have the appropriation restored to \$165,640 so that we will not have to still further reduce. So far as we can anticipate, without a restoration to the prewar total, we shall have to cut our work still further since we have taken up all the slack

and have taken advantage of the savings possible through having material partly grown in the nurseries. It is solely a question of the continuation of the work on the basis which has been followed in previous years.

The increase, like the bulk of the other expenditures, will go almost wholly for labor, hired during the planting season or during the season of active work at the nurseries. Some will have to be spent for temporary labor for collecting seed, since we collect our own seed almost entirely, finding it much cheaper to do so than to buy from seed houses. Col. Greeley, I think, has already explained the shift in the Niobrara item, which is very desirable, since in its present location as a part of the appropriation for the Nebraska National Forest we are unable to adjust the work on the Niobrara division to the best advantage.

Mr. BYRNES. You are now referring to the proviso?

Mr. CARTER. To the change of the \$5,000 carried in the current appropriation bill for the Niobrara division of the Nebraska National Forest to this item—the planting appropriation.

Mr. BYRNES. I do not quite understand that. Do you mean that in order to carry out this proviso this \$5,000 is necessary?

Mr. CARTER. No; we have had for several years a special appropriation, under the heading of the Nebraska National Forest, reading, "for the extension of the work to the Niobrara division thereof, \$5,000."

Mr. ANDERSON. And they transfer that \$5,000 over to this item.

Mr. CARTER. So we can use it to better advantage in connection with the regular appropriation.

Mr. GREELEY. I would like to add, Mr. Chairman, a few figures on the planting situation as a sort of progress report. Up to June 30, 1920, the Forest Service had planted 159,000 acres on the national forests. As far as we are able to estimate, the areas which are in need of planting—that is, forest lands which will not restock by natural means because usually of the degree to which they have been denuded by old fires—aggregate 1,500,000 acres. The average cost of our planting to date has been \$11.28 per acre. In other words, to plant the denuded lands in the national forests represents about a \$17,000,000 project. In view of the general need of the country for reforestation, we believe it is not going too strong to have the Government restore the work on its own lands to the basis on which it was conducted before the war. As you will note, the appropriation we are asking for simply restores the two prewar appropriations and brings them under one item. The question of policy here is how fast Congress wants to have the timber-growing resources of the national forests developed. It is one of the development projects which I spoke of this morning. It is not a matter of current urgency, except, as Mr. Carter pointed out, in that failure to get enough money to maintain our equipment and nursery stock is going to result in some loss to the business.

Gentlemen, the question involved is how fast does Congress want the timber-growing resources of the national forests developed up to the extent of which they are capable, with a million and a half of acres of land that ought to have growing trees, but will not grow them unless we plant them. It is my feeling that to progress at the

rate of eight or ten thousand acres a year, which is as much as we can do with the appropriation asked for, is a very conservative proposal.

FOR SILVICULTURAL, DENDROLOGICAL, AND OTHER EXPERIMENTS AND INVESTIGATIONS.

Under item No. 75, page 134, "For silvicultural, dendrological, and other experiments and investigations," we are asking for an increase over the appropriation during the current year of \$105,000. This is the item under which our forest investigations, as distinct from the research work in forest products and timber use, are conducted. The main purpose of this item is to carry on research work at forest experiment stations which are designed to do for the science of reforestation substantially what the forest products laboratory at Madison does for the science of timber use. Prior to the war we had developed five forest experiment stations in the West, one in Arizona, one in California, one in Colorado, one in Idaho, and one in Washington. Those five stations were working out the problems of forestry and tree growth in their respective regions. The cut which struck this item last year, a cut of 36 per cent, made it unavoidable to largely reduce the number of men employed at these forest experiment stations and to cut out the greater part of their work. Now, we are proposing to use this increase of \$105,000; first, to re-establish at least four of the western experiment stations and continue their work on the important reforestation problems of the West on the scale at which that work was conducted before the war. That will take approximately \$50,000 of this proposed increase of \$105,000. The forest experiment stations, however, should be extended to cover other forest regions. These stations are actually working out scientific facts of the utmost practical value to the reforestation of the United States. They have furnished the technical data which we use in our nurseries throughout the national forests. They have furnished the technical data on which our methods of cutting under timber sales are based. They have given us the scientific facts, the scientific tools, with which to operate.

We located these first stations in the West, because we had a big problem on our hands of developing the national forests as public property, and we felt it incumbent upon us to make our methods there the best that they could be. But the need for forest research work in other parts of the country is, from the general standpoint of national reforestation, even greater. There is a demand coming to us now from many different sources for extending that same sort of research. We ought ultimately to have 10 forest experiment stations in the country instead of 5. There should be 5 such stations in the eastern forest regions, 1 in the Lake States, 1 in New England, 1 in the north Allegheny region, and 2 in the South. These 10 experiment stations would do more, in our judgment, than any other scientific effort that the Government might exert to encourage and carry forward the whole national movement of reforestation. It would give many private owners of timberlands the information they are seeking—how to reforest their lands in the most practical and least expensive way. What we want to do this year, if Con-

gress will give us the increase in the item, is to start two additional forest experiment stations, leaving the remaining four to come at some later time when it is deemed wise to finance them.

So we wish, first, to rehabilitate our existing forest experiment stations, which will take approximately \$50,000 of this increase, and then we want to spend \$20,000 for starting two additional stations out of the five which are needed to complete the chain of stations where intensive reforestation methods should be worked out.

In addition to that——

Mr. ANDERSON (interposing). Where are the proposed stations to be placed?

Mr. GREELEY. As to the selections, I will ask Mr. Clapp to answer because he is more familiar with it than I am.

Mr. CLAPP. We would locate one of the proposed stations somewhere in the far South to cover the forest problems of the southern pine belt, and the second at some point in the southern Appalachians to cover the problems connected with the growing of hardwood timber in that region. The reason for placing the southern pine station first is because of the very important place which southern pine has occupied in the lumber markets of the country for the last 10 or 15 years and because of the exceptional opportunities for forest growth in that region. Out of a normal lumber cut of something like 40,000,000,000 feet, in the neighborhood of 15,000,000,000 feet have come from the South to supply the great lumber markets of the East and Middle West. The lumber cut of the South is going to fall off rapidly, and anything that we can do to stimulate the production of timber in the South is going to be of benefit not only to the South, but to the entire East and Middle West.

The reason for a station in the Appalachian hardwood region is to stimulate the growing of hardwood timber. The great bulk of our remaining hardwood timber is in the southern Mississippi Valley on rich bottom lands which will eventually be used for agriculture. We shall have to depend very largely in the future for our hardwood upon what can be grown on mountain lands in the Appalachians.

Mr. BYRNES. Still, I do not know where the stations are going to be?

Mr. CLAPP. The exact location in these regions would have to be selected later.

Mr. ANDERSON. I have received about 40 telegrams about some suggestion of a forest station at Asheville, N. C. Is this one of the experiment stations?

Mr. CLAPP. Asheville would be a very good location for a forest experiment station for the Appalachian region.

Mr. GREELEY. I wish to say that one of the locations we have considered for a hardwood station is in the national forests in the vicinity of Asheville, but we have made no final selection. The other station would be at some point in the southern pine region, possibly in Florida, on the national forest there; possibly at some point in Louisiana or Mississippi, in order to get a more typical section of the southern pine region to work in.

Mr. BYRNES. What do you propose to do at the experiment station?

Mr. CLAPP. One of the things which we would do would be to develop methods of producing nursery stock for forest planting.

Mr. BYRNES. With the idea of having the local authorities then cooperate in the planting or encouraging the individual?

Mr. CLAPP. Yes, sir. On the national forests we would have the results for our own operations, and they would also be available for the use of States or of individuals or municipalities, anyone who wished to plant.

Mr. GREELEY. You also can do a great deal through telling people how to reforest their lands naturally. Planting is just one phase of it. Most of the southern pine country will reforest itself if it is handled right. Most of the hardwood country will reforest itself with reasonable care. What we want to do is to work out the science of reforestation in concrete terms, so as to know the right way to get results, the cheapest way to reforest under each set of conditions, whether by planting or by natural methods.

Mr. CLAPP. The most urgent of the other problems which we should like to undertake is a study of the taxation of timberlands. The present method of taxing timberlands in practically every State where there is timber is an annual tax which is levied again and again on the same timber from the time it starts growing until it matures. Furthermore, the owner of the timberlands does not know what will happen in the future; there is no certainty as to the amount of the future tax. This situation is very discouraging to the owner, so far as the growing of timber is concerned. What we should like to do is to work out some form of taxation which would require timber to bear its fair share of the cost of government and at the same time encourage timber growing rather than timber devastation.

Mr. GREELEY. I just want to make clear how we propose to use the increase we are asking for. Fifty thousand dollars is to reestablish the existing experiment stations in the Western States; \$20,000 to establish two new experiment stations in the Eastern States; and \$35,000 for studies of the economic questions which bear upon reforestation. Taxation of timberlands is one of those economic studies. Other studies to be made are along the line of the report which the Forest Service submitted to the Senate last June in response to the Capper resolution, in which was presented the economic situation of the country as to its timber supply.

There are many phases of this whole timber-supply problem in which further investigation should be conducted. We now have, for example, the acute situation in the paper industry. We are wondering where its future supply of raw material is going to come from. We would like to study the specific problem of raw material for the paper industry. We would like to do the same thing for other industries; for example, those which require special grades of hardwoods. We want to round out the basic information from which the timber supply problem of the country as a whole can be properly grasped. That is one of the projects which, in addition to forest taxation, we would undertake if this increase is granted.

Mr. ANDERSON. That is in line with Mr. Magee's 100 per cent pulp suggestion?

Mr. GREELEY. Mr. Magee has a good idea. If a paper industry should establish itself on Puget Sound and offer a fair price for pulp

wood, they would get a good deal of the waste material now left in logging operations. That is one of the phases of this whole question that Mr. Clapp touched upon in the utilization of waste.

FOR THE STUDY OF FORESTS ON FARMS, ETC.

No. 76, page 136, is a new item, proposing an appropriation of \$25,000 for the study of forests on farms and for advising farm owners as to the planting of waste lands with forest trees, the establishment and care of windbrakes, shelter woods, and wood lots, and also the most advantageous marketing of forest products grown upon such farms. The Forest Service has done a considerable amount of investigative work bearing upon farm wood lots and has published its results from time to time in farmers' bulletins, and in other publications designed to give the farmer practical suggestions of taking the best care of his wood lots and also on marketing their products to the best advantage. We have been unable, however, to do nearly as much work of this character as should be done. The farm wood lots embrace about one-third of the entire area of forests in the United States, and particularly in the Eastern States they form an important part of our remaining timber supply. East of the Mississippi River about 40 per cent of the standing timber is attached to farms as a part of farm holdings.

The farmer is the type of timber owner who should be most interested in reforestation, because, as a rule, he represents a more permanent ownership than the lumber company and he has a more permanent interest in keeping up the value of his property.

We have proposed this item because we wish to enlarge the extension work which we have done hitherto from time to time in advising the farmers, by regions, where forest conditions are the same, as to the best methods of handling their timberlands and wooded areas which are useful as an adjunct to their property. The field for this sort of work is enormous. We want not only to advise the farmer how to grow trees on his poorer land but also to advise him on the best methods of disposing of his timber after it has grown. The farmer is proverbially a poor timber seller; he does not get the value of his timber, because he does not know what its value is. We have seen from the results of our work hitherto that a large field lies available for practical reforestation if we have the funds to take this matter up. Without this item we can still do something, but we should have a small group of men—14 if this money is appropriated—who will specialize in this field of farm forestry and carry on the work as a continuing project for it will continue indefinitely. I do not know of any way in which \$25,000 could be expended to better advantage to encourage reforestation than under this item.

FOR ESTIMATING AND APPRAISING TIMBER AND OTHER RESOURCES.

No. 77, on the same page, is an item for estimating and appraising timber and other resources on the national forests preliminary to disposal by sale or to the issuance of occupancy permits, and for emergency expenses incident to their sale or use. The amount is \$80,000 for the present year and an increase of \$45,000 is requested.

This is the item which I referred to this morning as one of the development projects under which we are making a survey of our commercial resources and getting the information necessary as a preliminary to their exploitation. For example, we have all told approximately 80,000,000 acres in the national forests which carry merchantable timber. Up to the present time, under this item in preceding appropriation acts, we have made a map and estimate of the timber on approximately 20,000,000 acres or about one-fourth of the total area of merchantable stumpage. This work costs between 10 and 20 cents per acre, for which we get a good topographic map, sufficient to serve as the basis for laying out logging operations and appraising the value of the stumpage, together with an accurate estimate of the quantity and quality of the timber.

We also utilize the same item for making similar surveys of the national forest pastures in order to get suitable maps on which to lay out the grazing allotments and administer the grazing business, and to get an accurate idea of the carrying capacity of the various national forest ranges.

Mr. ANDERSON. What is the difference in the work done under this item and the work done by men who are paid out of other items, the general expense item, for instance?

Mr. GREELEY. You mean the research items?

Mr. ANDERSON. No; I mean your general expense item. You have scalers, rangers, grazing experts, and everybody else under these items, and I was wondering what the difference was between the work done under this item and the work done by the men who are employed under the other items.

Mr. GREELEY. The difference is that the men employed under the general expense items are required to give the bulk of their time to the handling of current contracts. Our scalers, for example, are employed all the time in measuring the timber that is cut under sale contracts; our lumbermen and many of our rangers are employed in the same way and also in inspecting the sale areas, seeing that the timber is properly marked, seeing that the requirements of the contracts are carried out, seeing to it that the slash is properly disposed of, etc. Now, this is the item under which the bulk of our planning ahead must be done. We do get a good deal of help on this survey of resources from our personnel employed under the general expense item. The spare time of rangers is often used in cruising and surveying timber areas and range areas, and the spare time of lumbermen and logging engineers is used for the same purpose. But in order to survey our resources adequately and rapidly enough to handle the incoming business we have got to have a fund in addition to the general expense fund, which is so largely mortgaged, to take care of the current business and protection. It is for that purpose that this item for the survey of resources has appeared in our appropriation estimates for a good many years.

I can illustrate the matter best by referring to our present situation. We have pending to-day applications for 3,000,000,000 feet of timber in the national forests of the States and other applications for approximately a like amount in Alaska. These people come to us with a request that a certain block of timber be cruised, mapped, appraised, and put up for sale; they want to have a chance to bid on it:

if we had to wait until we could get the rangers and scalers together to do that work we could not begin to keep pace with this demand. With this special item we organize, in the districts where this timber sale business is pending, a few special crews of men who have no administrative jobs to go in and map and estimate these areas for which timber applications are pending. It is only through the availability of a fund for this purpose that we can make the necessary maps and estimates and timber appraisals to take care of the business which is knocking at our door.

On the grazing side the situation is just this: We have 125,000,000 acres of land which contain more or less forage and which ought to be used to carry live stock to the extent that that use will not interfere with reforestation. We have covered about 18,000,000 acres of that land with an intensive grazing reconnoissance, which gives us a good map to work on, a good estimate of what the land will carry in different classes of stock; what the land needs in the way of improvements in order to reach its full utility, and a good business plan on which to carry the grazing business. We get that for about a cent and a half an acre.

Until we make this survey of a grazing unit, we go ahead on the best information that our local men can get and administer the business as well as we can. But in order to utilize our national forest ranges to the fullest capacity, without injury, we sooner or later have got to have an intensive study of this character. The proposition is so big and the problem of utilizing these resources to the fullest advantage is so great that it is just a question of time before the Government will be compelled to make these intensive surveys to find out just what it has and how it can best be used. On the grazing side again, when the Forest Service took over the administration of the national forests, we found that many of the ranges had been so overgrazed that the live-stock men said they had become dust heaps. The forage had greatly deteriorated in quantity and quality, and one of the most important things we have had to do has been to restrict the amount of stock using these forest ranges sufficiently to let the ranges come back. We have now reached the point where we are turning down a good many applicants each year who want to graze live stock, because we do not believe that the ranges would carry an increased amount of stock without deterioration. But it is something that ought not to be settled without an intensive study of this character. That is what the grazing reconnoissance is designed to give us—a basis on which we can settle administrative plans for the amount of stock which should be admitted to the forest ranges.

Mr. ANDERSON. I notice in your tabulation an estimate of \$25,800 for wages. What necessity have you for paying wages in connection with this item?

Mr. GREELEY. Those are temporary employees who do not form part of the permanent force. They include cooks, packers, chainmen, compassmen, and other men occupying subordinate places on the survey crews, who are only employed for three or four months during the summer season.

Mr. ANDERSON. Is that all you care to say about this item?

Mr. GREELEY. I wish to connect this item with the statement I made this morning about the policy of taking on more timber busi-

ess. Without an increase in this appropriation, a good many applicants for national-forest timber will have to wait until we are able to cover the areas that they want, and that means that the increase in the volume of timber cut from the national forests and in the receipts from timber sales will progress more slowly. We have estimated under this item for the minimum increase that we regard as necessary to take care of the business that is now offered us, and the amount of money we get for this purpose hinges on that business policy. That applies, perhaps, with special force to Alaska, where we have an opportunity to greatly increase the use of national-forest timber and at the same time establish a pulp and paper industry which would be a very beneficial thing for the whole country. But in those wilderness areas, about which we have only the most general information, it is impossible to make timber sales with any degree of intelligence and business forethought without a survey of the ground in advance; in fact, the people who propose to develop the pulp woods of Alaska would not consider it unless we were able to give them reasonably accurate information.

Mr. ANDERSON. Is the transportation situation such as to furnish prospect that this timber can be gotten out if it is sold?

Mr. GREELEY. That is true, sir; as long as the prices of paper continue on any such levels as have held for the past three years. The marine transport service for Alaska is not adequate; but I am satisfied that these people who are considering the construction of paper mills in Alaska will not be held back by that factor, that they will furnish their own transportation if need be.

3 OTHER MISCELLANEOUS FOREST INVESTIGATIONS AND FOR COLLATING, ETC., OF EXPERIMENTS AND INVESTIGATIONS.

The next item is No. 78, "for other miscellaneous forest investigations, and for collating, digesting, recording, illustrating, and distributing the results of the experiments and investigations herein provided for." In this item we are asking for an increase of about \$50,000. This is the item under which the editorial and informational work of the Forest Service is conducted. It is the item under which the editor's office is maintained for reviewing all material intended for publication, and for working up material which it is desired to give the public, primarily in order to extend the doctrine of fire prevention. Our assistant forester who has charge of this work, Mr. Smith, is here, and I am going to ask him to speak to the committee about that item.

Mr. SMITH. I should say that this item is not all of it given to the work of the editor's office. The increase is for the purchase of laboratory supplies and that sort of thing. The item, as a whole, provides, I believe, for no increase in personnel. The thing I wish to speak of is the handling of our publications, the collating, digesting, and so on, necessary to put them into final form. It is the effort of the Forest Service to be extremely careful about each publication and to do our best to make it effective for the particular kind of use for which it is intended. For this it is necessary to have men of technical training and capacity; the work is done with great thoroughness and also with an attempt to put it in the best form for the special

class of readers to whom it will go. It takes the time of three people on the editorial work. The largest unit is that which we call proofs and forms. The term is not fully descriptive, but it has to do with everything relating to our printing work. The job work of the service is very large, necessarily, because of the great number of forms that have to be printed for such diverse kinds of field work. We have found that considerable economies could be secured by keeping a watchful eye on the arrangement of the forms, watching out against the unnecessary multiplication of forms, the use of the cheapest kind of paper that is available, and if binding is necessary in order to make a publication serviceable for field work to get the kind that will be effective at the lowest cost.

Mr. ANDERSON. Is this work done in the Forest Service?

Mr. SMITH. Yes; this is done in the Forest Service.

Mr. ANDERSON. I supposed that all that sort of thing was done at the Government Printing Office.

Mr. SMITH. The actual printing is done at the Government Printing Office, but this is for the preparation of the forms, etc., in order to send them to the Printing Office.

Mr. BYRNES. This is a very simple item. What you propose to do is to reduce the number of your employees by two and increase the compensation to be paid to the remaining employees to \$2,780; is not that right? You have 13 employees now and you propose that for the next year there shall be 11.

Mr. GREELEY. In the office as a whole that is correct. There will be a reduction of two in the number of employees and an increase of \$2,780 in the total amount of compensation.

Mr. BYRNES. For equipment and material you have estimated an increase of about \$2,600.

Mr. GREELEY. Yes, sir.

Mr. BYRNES. What is that increase to be paid for?

Mr. GREELEY. That increase is to be paid for photographic materials. The work we do in printing maps is done through photographic processes, and this is for the materials, blue-printing supplies, etc.

Mr. BYRNES. What is the necessity for the increase?

Mr. GREELEY. The increased cost of materials.

Mr. BYRNES. Do you expect an increase next year over this year?

Mr. GREELEY. No, sir; but it is the same situation that I spoke of this morning in reference to our item for general supplies and equipment. We have had to economize so closely and reduce our stock of materials so largely that unless we can get some increase of funds that will be available for buying new stuff our work is going to suffer seriously.

Mr. BYRNES. So there has been a depletion of your stock and you want to replenish it?

Mr. GREELEY. Yes, sir.

FOR CONSTRUCTION AND MAINTENANCE OF ROADS, TRAILS, BRIDGES, ETC.

The next item is for the construction and maintenance of roads, trails, bridges, etc., and we ask for an increase of \$100,000 in the amount and also for some changes in language that are important. First, as to the increase in our improvement work. We have been

caught again by the increased cost of materials and of temporary labor which is employed in the construction of buildings, trails, and telephone lines. Of this increase we propose to use \$50,000 primarily to maintain the improvements already constructed in usable condition.

We have found that with the growing cost of maintenance it has been well-nigh impossible to make even the most necessary increases in the permanent plant—that is, in the mileage of trails and telephone lines and in the number of essential structures. Fifty thousand dollars represents the increased cost of maintaining the plant which we have already built; the other \$50,000 of the increase we propose to use for the construction of range improvements, drift and division fences, improvements of watering places, and the like. With that proposal to expend this amount of money on range improvements, we have provided new language under which expenditures for range improvements can be made only on national forests whereon the receipts from grazing fees will be increased as a result of the range improvements constructed to an amount sufficient to pay the cost of the range improvements within seven years.

Mr. ANDERSON. That does not relate, I take it, to an increase per head?

Mr. GREELEY. Not necessarily; but in certain cases an increased fee per head will be justified as a result of the improvements which are constructed; and where that increase is justified, it is my judgment that it should be charged. Stockmen have told us in a good many places that they would gladly pay twice the present grazing fees if certain simple improvements were made in their ranges which would reduce the losses, reduce the cost of handling the stock, and reduce the killing of stock by poisonous plants. I view this as a straight proposition of business development.

I think it is preferable for grazing improvements to be constructed by the Government rather than by the stockmen themselves, and I think it is only fair that when the Government does improve the range over its natural condition, it should receive the increased value of that improved range in the form of higher fees. In a good many cases, by the construction of some of these simple improvements, we can increase the number of stock actually using a given range, so that the cost of the improvements will be paid back in a relatively short time without any change in the grazing fee.

A second change in language in this item is the proviso that the Secretary of Agriculture may use not to exceed \$5,000 of the total fund appropriated for the purchase of land needed for ranger stations. In a great majority of cases the land needed for ranger sites is national forest land already in Government ownership; there are a number of urgent cases, however, where, to discharge his work, a ranger should be located at a particular point. To locate him somewhere else is a serious disadvantage, not so much to the Government as a rule as to the forest users who deal with that ranger. In order to take care of these exceptional cases, we would like to have authority to spend a small amount for the purchase of land actually needed for ranger stations. We now have pending 12 such instances, and it is probable that the entire 12 little sites needed could be bought within the \$5,000 limit named in this proviso.

Another important change in language which we ask for is authority to exceed the limit placed in the general authorization to the Secretary of Agriculture on buildings in the case of not over 30 structures. The appropriation bills for the Department of Agriculture have carried limitations for a good many years on the cost of any building which might be erected by the Forest Service. Paragraph No. 61, on page 119, reenacts the limit of \$1,000 as the maximum which can be expended in the construction of any building on a national forest, and that is the limit which has been in effect hitherto. Now, \$1,000 is sufficient to build a patrol cabin or a lookout station on the top of some mountain peak, or a warehouse, or a shed for storing fire-fighting tools. As a matter of fact, we erect a good many of those small structures for \$100 or \$200, but \$1,000 is wholly inadequate for constructing a ranger station used as the year-around quarters of a Government officer and his family, and also affording office facilities and storerooms. We have been very badly handicapped in the past by the imposition of this fixed limit now standing at \$1,000 upon any building which we might construct. You gentlemen certainly can appreciate that at the cost of building materials, carpenter labor, and the like, during the past few years particularly, it is out of the question to build a decent set of quarters for a forest ranger for \$1,000 or anything like \$1,000.

Mr. BYRNES. How many buildings is it necessary for you to build at this time?

Mr. GREELEY. During the next year we wish to build 30.

Mr. BYRNES. What is the necessity for 30?

Mr. GREELEY. We have 30 cases where the present ranger should be provided with Government quarters because of the place where he is stationed and required to work.

Mr. BYRNES. Have you 30 men who have no such quarters now?

Mr. GREELEY. We have 30 men who have no such quarters now or whose quarters are wholly inadequate or an unfit place to live in.

Mr. ANDERSON. Are these quarters already constructed?

Mr. GREELEY. These quarters are all to be constructed out of this appropriation.

Mr. ANDERSON. Will that result in a reduction of the amount available for building roads, trails, bridges, and so forth?

Mr. GREELEY. The appropriation is split between the construction of buildings, roads, trails, and telephone lines. As a matter of fact, we do not feel justified in building scarcely any roads under this item. We have other appropriations under the general Federal legislation dealing with roads, and this item is used for the construction of trails, telephone lines, and necessary quarters and for the maintenance of the structures, trails, and telephone lines already built. As you see, what we propose, 30 buildings, at a cost of not to exceed \$3,000 each, would mean a maximum of \$90,000 out of the \$400,000 going into the permanent and necessarily substantial ranger stations. These ranger stations represent the offices of considerable districts at which the national forest business must be transacted. They are the points to which the users come from every direction to deal with the Government forest officer who must provide for their needs.

We feel, as a matter of self-respect, that we ought to maintain creditable buildings at these points. As a matter of decency and to

encourage self-respect on the part of our employees, we ought to give them reasonably comfortable and attractive quarters, particularly in our effort to retain experienced men. Many of them, of course, have families and rightfully ask that they be able to provide decent comforts for their wives and children. We do not feel that the construction of a limited number of ranger stations for \$2,500 or \$3,000 each from time to time is an unreasonable request.

As a minor change we have included two "hereafters" in this item in connection with legislation that has appeared in our appropriation bills for a number of years in order to make them continuing legislation and avoid the necessity of repeating those items every year. There is no question, as far as we are concerned, about the items themselves.

FOR PURCHASE OF LANDS.

Item No. 80, on page 14, carries no appropriation, but provides an increase of \$4,000 in the amount of money hitherto appropriated for the purchase of lands which may be expended in the District of Columbia. The appropriation bills from time to time have carried a limitation on the amount of the funds appropriated for acquisition of lands which could be spent for salaries in Washington. We have found that with the volume of title work, checking of surveys, and that sort of thing which should logically be done here, it is not possible to carry the necessary personnel at Washington within the present limitation. For that reason an increase of \$4,000 in the limitation is asked for without any further appropriation.

Mr. ANDERSON. This is not contingent at all upon additional appropriations under the Weeks law?

Mr. GREELEY. No, sir; this is in connection with the expenditure of appropriations previously made.

FOR SUBSISTENCE OF EMPLOYEES.

If there are no further questions on No. 80, item No. 81 again contains no additional appropriation, but is a request for authority made necessary by the outstanding fiscal requirements of existing law, to enable the Forest Service to furnish subsistence to employees carried on our regular rolls and to make deductions for such subsistence from the salary payments otherwise due the employees in question. We are using our year-long personnel as far as possible in extending the surveying, mapping, and timber estimating, and in combating insects and similar work, where they must, as a rule, work with other men who are temporary employees and to whom subsistence is furnished as part of the contract of employment. These men work in the same crew, live in the same camp, and mess at the same table. It is obviously desirable for simplicity and economy that we be enabled to handle them on the same fiscal basis in carrying the cost of the subsistence; but under the existing laws, as interpreted by the Comptroller of the Treasury, that can not be done.

Mr. ANDERSON. What do you do now?

Mr. GREELEY. As it stands now, the ranger who works at these camps has to pay his proportionate share of the subsistence, and then he may, if the regulations permit, submit an account for reim-

bursement of the amount he has paid, if he is entitled to such reimbursement. In other cases and in the usual case, however, the ranger is not entitled to reimbursement, and it makes the head of the crew carry two accounts, one account with the men to whom subsistence is furnished as part of their contract of employment and another account with the rangers from whom he must personally get payment for their share of the board. This little item here would simplify the whole thing and would make it possible to carry the accounts as one and then make suitable deductions from the salary payments otherwise due the officers to whom subsistence is not due as part of their contract of employment. Have I stated that situation correctly, Mr. Headley?

Mr. HEADLEY. Yes, sir; except your first illustration does not apply. If the man is entitled to reimbursement later, then there would be no point in this legislation.

Mr. GREELEY. That is right.

Mr. ANDERSON. Taking the cost of this subsistence out of the man's salary may be entirely satisfactory from an administrative point of view, but I am wondering whether it will be entirely satisfactory from the standpoint of the employee. Is it not liable to some abuse?

Mr. GREELEY. I do not think so, Mr. Anderson. These men, like the forest rangers, are employed under a contract which requires them to furnish their own subsistence. Now, their work assigns them to this particular job. Very seldom can they move their own families over there, if they have them, and they do not want to cook their own meals or carry their own supplies separate from the commissary which supplies the camp. They want to throw in with the crew and get subsistence from the same supplies. Now, as I said, under the present conditions the man responsible for the camp and the supplies has to carry a separate account with each of these rangers and collect from them personally.

Mr. BYRNES. Will he not have to carry a separate account in order to deduct the amounts from their salaries, under your proposal?

Mr. GREELEY. Yes, sir; at present——

Mr. BYRNES (interposing). So he has got to carry the account in either event.

Mr. GREELEY. Under what we propose, the man in charge would turn in vouchers for \$100 worth of supplies. This \$100 worth has furnished so many meals to such and such men to whom subsistence is furnished as part of their contract of employment. Those are the temporary men employed during the summer. So many meals were also furnished to rangers so-and-so to whom subsistence is not due as part of their contract of employment. The average cost of each meals is so much. Therefore ranger so-and-so owes the Government so much money and they take it out of his next salary check.

Mr. ANDERSON. You would have about eight times as much book-keeping down here under that system as you have now.

Mr. GREELEY. There would not be any here. It would be out in the field.

Mr. BYRNES. By whom is the salary check issued?

Mr. GREELEY. By the fiscal agent in each of our district offices.

Mr. BYRNES. They would have to go through the various channels to the disbursing officer to advise him that from the salary of John Smith, for instance, there must be deducted \$4.65 for meals.

Mr. GREELEY. Yes.

Mr. BYRNES. And then he would have to figure that out and deduct it from John Smith's salary, and then Sam Robinson would owe about \$9.25, and so on. Will not this involve just as much bookkeeping?

Mr. GREELEY. It would involve a certain amount of bookkeeping, that is true; but it would make the situation easier to handle because as it stands now the man who buys the supplies and who is responsible for running the camp must look to each of these rangers personally to reimburse him for the proportionate amount of the supplies which they have used. He has to get the money from them individually and with that money pay a certain part of the account.

Mr. BYRNES. It looks to me that he could devise a system of charging so much a meal and making them pay as they go along. As it is now, when you send in these accounts you will have a board of appeals to pass on them, because John Smith will swear he did not have 19 meals last month: that he did not have but 17, and that he kept account of them, and the cook is going to have him charged up with 19 meals, and you will have to have a board of appeals to settle whether John or the cook is right.

Mr. GREELEY. I do not anticipate any trouble on that score.

Mr. BYRNES. It looks to me that you could devise a better system than either one of them if somebody would put his head to it and arrange so that the proportionate cost of the meal is so much and then issue checks to them and then figure it out in some way whereby they could pay for the meals as they go along.

Mr. GREELEY. One of the difficulties of the present arrangement is that the man who is buying the supplies has to carry a cash account with everyone of these permanent forest officers who are assigned to his camp, and then he has to split the supply bill and pay part of it with the cash he has received from these men in return for their meals and pay the rest of it with a Government voucher, because we do not issue any cash to these field parties and do not let them handle any Government money at all. It is all handled on vouchers, which come up for checking before they are paid. So he has to split his bills with the nearest grocer and butcher and pay part of them with the cash he has collected for meals from certain members of the crew and pay the rest by a voucher. There is more liability of mix-ups through that system, I think, than the system we have proposed.

Mr. SHERMAN. There is another class of cases that are quite important for us to handle. That is the case of the scalers, who are assigned to large timber sales, where they board at the lumber camps. As our representatives they measure the logs that the lumber company is buying and then in their personal capacity they take their meals at the boarding house maintained by the lumber company. We would like in cases of that kind to put them in a position where they will get away from the landlord and boarder relation as between the rangers and the timber company.

Mr. BYRNES. How are you going to do that?

Mr. SHERMAN. This would do it. This would enable us to pay for their board and deduct it from their salaries.

Mr. BYRNES. You gentlemen, after figuring it out, think that this is the best plan?

Mr. SHERMAN. Yes. There is just one further thing on this matter. I understand that within the last few days our solicitor has raised the question whether "employees" will actually cover what we want, and it may be necessary to make that "officers and employees" so as to cover the permanently employed men in cases like I have cited.

Mr. ANDERSON. Of course, under this language the Secretary, if he wanted to, could start a restaurant down here in the department building and feed everybody, if he had the money to do it with.

Mr. GREELEY. May I ask, Mr. Chairman, that those two words be inserted, "officers and," in front of the word "employees"?

Mr. ANDERSON. I do not imagine the committee will be willing to adopt language as broad as this in any event. As I say, under this language the Secretary could start a restaurant down there if he wanted to and feed everybody, and all he would have to do would be to take the money out of their salary checks.

Mr. GREELEY. Any form of language would be satisfactory to us that would meet our situation.

Mr. ANDERSON. It seems to me it clearly ought to be limited to employees of the Forest Service, if nothing else.

Mr. BYRNES. Do you not want to limit it to the employees of the Forest Service, and, if possible, more specifically designate the class of employees?

Mr. GREELEY. That would be entirely satisfactory to us, and I do not presume the Secretary of Agriculture would have any objection. I do not know of any other bureau making this request.

Mr. BYRNES. So far as you are concerned, you are not looking after any other bureau in making the request.

Mr. GREELEY. That would be entirely satisfactory to us. Let me emphasize the situation Mr. Sherman referred to. We have a scaler who is getting his meals at a lumber camp. We would very much rather have that lumber company send us at the end of the month a bill for that man's meals and let us pay the bill to the lumber company than to have him paying them for his meals from time to time, and possibly accepting a free meal now and then. We would rather handle it as a transaction between the lumber company and the Forest Service in order that there may be no question as to that man's status there as a representative of the Government rather than as a tenant of the lumber company.

If there is nothing further on that, Mr. Chairman, the Forest Service section of the bill is completed. We have two items under the miscellaneous section.

Mr. ANDERSON. What are they?

COOPERATION WITH STATES IN FIRE PROTECTION.

Mr. GREELEY. One of them is an appropriation for cooperation with the States in fire protection and other phases of forestry about which we discussed the possibility of arranging for a special hearing.

Mr. ANDERSON. That is the \$1,000,000 item upon which the Secretary of Agriculture has submitted a supplemental estimate?

Mr. GREELEY. Yes, sir.

Mr. ANDERSON. I think that can just as well go over until we finish the regular items. What is the other item?

RECONNOISSANCE OF LANDS.

Mr. GREELEY. The other item is one of \$50,000 for a special reconnoissance of lands included in the indemnity limits of the Northern Pacific land grants. I will ask Mr. Sherman to discuss that.

Mr. SHERMAN. The grants in aid of the construction of the Northern Pacific Railroad gave to the railroad company alternate sections for a certain distance on each side of their line crossing the public-land States of Montana, Idaho, and Washington, and at the same time made a provision that if any of these odd sections were occupied, or if the grant failed for reasons such as their being found to be mineral, the railroad company might make selections in lieu thereof from the odd sections in an additional 10-mile strip. A later law extended this to a second 10-mile strip. The railroad company exercised its right at various times, but at the time of the creation of the national forests through these States a considerable amount of the land that was thrown into the national forests was unsurveyed. The railroad company now claims the right to go into these national forests within the first and second indemnity strips and select at will the odd sections in lieu of odd sections lost within the primary limits of their grant. This right has been opposed by the executive departments, and it is now at issue before the Supreme Court. It arises in connection with a suit brought by the Federal Government to cancel a patent to a tract of 5,481 acres issued to the Northern Pacific Railroad for lands within what is now the Gallatin National Forest.

This patent was issued through an error in the Land Office and when it was discovered the Northern Pacific Railroad Co. was asked to return the patent in order that it might be canceled. They refused to do so and maintained that they had a right to make the selections and had never pressed this right before because they would do so under adverse legal conditions. The Government brought a suit to cancel the patent and has lost the suit in the lower courts and in the circuit court of appeals, greatly to our surprise, because we felt that the railroad's contention was without solid ground. It has been appealed to the Supreme Court. The case is now pending before the Supreme Court, and upon it hinges the title to between three and four million acres of land lying within the national forests of Washington, Montana, and Idaho.

Officers of the Northern Pacific have at times referred to this case as a \$30,000,000 suit. The lands involved are probably worth easily that. They embrace some of the best timberlands in the Northwest. The outcome of the suit is problematical, and we feel that we would be in a very much better position to handle the matter if we could make certain investigations regarding the underlying equities in this case. We feel it can be shown by investigation that this indemnity provision has more than repaid the Northern Pacific for its loss of lands in place.

Mr. ANDERSON. What advantage would there be in determining that question after you have lost the lawsuit?

Mr. SHERMAN. After we have lost this lawsuit, if we lose it, the railroad company will have to face the question of filing their lists and then bringing mandamus proceedings against the Secretary of

the Interior to compel him to issue the patent. That would be the next step in the procedure.

Mr. BYRNES. Granting that the Secretary of the Interior allows them a patent, then what?

Mr. SHERMAN. If they do that then we will have the information to show the equities in the case, which were not considered at the time the court had before it merely its legal aspects. I feel very sure we will be able to secure information and data which will have a very material bearing upon the decision of the case and will enable us to put the matter before the Supreme Court in a way that will save these public lands for the public. Furthermore, if we can not clearly show that, we hope we can show a state of facts similar to that existing in the case of the Oregon and California land grant in Oregon, where suit was brought to cancel the grant. The Supreme Court did not sustain the suit to cancel the grant, but held that since the grant was originally given by the Government conditions had changed so materially as to warrant the Federal Government in retaining the lands, but meanwhile securing to the railroad company the equities they were entitled to under the terms of the grant. I feel that we will be able to show that since the grant was given to the Northern Pacific Railroad conditions have changed very materially, that the passing of title to these valuable timberlands and watersheds, some of which are the headwaters of navigable streams and many of them having an important bearing upon Federal irrigation projects, that broad public policy would not justify passing title to the Northern Pacific, but that some other remedial legislation should be granted them instead of giving them title to these \$30,000,000 of forest lands. Or, perhaps, a solution might be found in some other way, such as by giving them a solid body of land elsewhere instead of going into our national forests and checkerboarding two additional strips 20 miles wide. They might be given a consolidated tract of land somewhat equivalent in area and value, so there would not be such a large forest area destroyed and so that the Government at least would have a half of the total area involved within the national forests as a consolidated body instead of it being checkerboarded by railroad lands.

Mr. BYRNES. Would you hope to secure, by sending examiners up into that territory, something that you do not now know?

Mr. SHERMAN. We hope to secure a considerable amount of additional information. We would be able to show what actual losses the Northern Pacific sustained through the mineral classification. For example, within their primary limits they were not entitled to secure patent to such odd sections as might be classified as mineral. This classification was made hastily and the results were greatly to the advantage of the Northern Pacific Railroad. In many places, generally speaking, everything that was barren or had no timber on it was classified as mineral. For lands so classified the railroad was privileged to go out into the indemnity strip and select valuable timberlands. As a matter of fact, within a considerable part of the primary limits the lands so classified as mineral were not mineral in fact. Had the Northern Pacific secured title to them they would have secured very little of value. Instead of securing title to these rough and valueless lands, they have secured title to a smaller area of

selected lands within the indemnity limits already, but they have not secured title to as great an acreage as the total of the odd sections within the primary limits of their grant. By this selection system, I believe, we will be able to show that they have secured a greater value than they would have obtained had they secured the title to every odd section within their primary limits. It is an investigation of the value of lands that were used as base lands as compared with the value of what they actually obtained, that we would accomplish through this item.

Mr. ANDERSON. Is there any emergency for this proposition that necessitates the making of this investigation during the next fiscal year?

Mr. SHERMAN. Of course, we have no knowledge as to when this decision will be made by the Supreme Court; but even if the decision is favorable to us the Northern Pacific land grants through Montana, Idaho, and Washington present a big administrative problem that we will have to work out in some way. We should get a better knowledge of their lands and of their value and try to arrive at some means whereby, either by exchange or acquisition or in some way, the Government will eventually wipe out this checkerboard system and secure control of the forest lands inside of the national forest boundaries.

TUESDAY, DECEMBER 28, 1920.

BUREAU OF CHEMISTRY.

STATEMENT OF DR. CARL L. ALSBERG, CHIEF.

REDUCTION IN NUMBER OF EMPLOYEES—INCREASES IN SALARIES.

Dr. ALSBERG. There are a number of changes proposed in the statutory roll which in general consist of the elimination of a considerable number of statutory places, and the substitution of a lesser number of places at somewhat higher salaries, with the net result that there is a diminution in the total for the statutory roll involving necessarily some diminution in the total number of the force that will be employed. Most of it is explained in the first note on page 142, in which the statement is made that for 81 places involving a salary roll of \$73,460, there are substituted 54 clerical and subclerical positions aggregating a salary roll of \$70,080. At the present time we have some 48 vacancies in the statutory roll of the bureau.

Mr. ANDERSON. Does that include vacancies in the food and drug inspectors?

Dr. ALSBERG. Yes, sir; that includes three vacancies in the food and drug inspectors.

VACANCIES.

Mr. ANDERSON. Will you furnish us with a list of the vacancies you have now?

Dr. ALSBERG. I have that statement right here.

(The statement referred to follows:)

Vacancies existing on the statutory roll as of Dec. 27, 1920.

Title.	Salary.	Number.
Clerk.....	\$1,200.00	2
Do.....	1,100.00	1
Do.....	1,020.00	3
Do.....	1,000.00	1
Do.....	960.00	1
Machine operator.....	1,000.00	1
Clerk.....	900.00	2
Food and drug inspector.....	1,600.00	2
Do.....	1,400.00	1
Laboratory helper or laborer.....	600.00	15
Mechanic.....	900.00	1
Student assistant.....	300.00	2
Messenger.....	840.00	1
Do.....	480.00	3
Do.....	420.00	3
Do.....	360.00	2
Laborer.....	480.00	7
Total.....		48

Dr. ALSBERG. Of course, an effort will be made to fill some of these vacancies, but we estimate that there will be 33 fewer employees on the staff of the bureau on the 1st of July next than are provided for at the present time.

Mr. ANDERSON. Are those vacancies in clerical positions or in messengers, or just what are they?

Dr. ALSBERG. The vacancies are two clerks at \$1,200, one clerk at \$1,100, three clerks at \$1,020, one clerk at \$1,000, one clerk at \$960, one machine operator, meaning a photostat machine operator, at \$1,000; two clerks at \$900, two food and drug inspectors at \$1,600, one food and drug inspector at \$1,400, 15 laboratory helpers or laborers at \$600, one mechanic at \$900, one student assistant at \$300, one messenger at \$840, three messengers at \$480, three messengers at \$420, two messengers at \$360, and seven laborers at \$480, as shown in foregoing statement.

Mr. ANDERSON. I wish you would furnish the committee with a separate statement showing just what changes are made in the statutory roll, in parallel columns, so we will know just what happens here. It is rather hard to follow this matter in these isolated items.

Dr. ALSBERG. We will furnish it.

Mr. ANDERSON. What does this new rearrangement of the statutory roll make the entrance salary for clerks?

Dr. ALSBERG. \$1,020.

Mr. ANDERSON. Exclusive of the bonus.

Dr. ALSBERG. Yes; all of these are exclusive of the bonus. I also have a statement of what the average salary will be if that interests you compared with the average salary at the present time.

Mr. ANDERSON. I would like to have that.

Dr. ALSBERG. That is shown in the note. The average of the places dropped is \$907 and the average of the places submitted is \$1,298. If we prepare this tabulation for you, Mr. Chairman, it will not be necessary, then, will it, to consider each one of these individual cases?

Mr. ANDERSON. I would not think so.

TRANSFER OF FOOD AND DRUG INSPECTORS FROM STATUTORY TO LUMP-SUM FUND.

Dr. ALSBERG. Then the next thing that will interest you, I presume, is this matter of transfer of food and drug inspectors from the statutory to the lump sum.

Mr. ANDERSON. That is item No. 20, on page 143.

Dr. ALSBERG. Yes. That is proposed for this reason, the foundations of the enforcement of the food and drugs act are the inspectors. They can make or break the enforcement of that law. If they are inefficient or lack tact and discretion in their dealing with the industry and the consumer, being the bureau's visiting card as it were, they can make or break the enforcement of the law. They are not really clerks. Many of them are professional men. There are some chemists, there are some lawyers among them, there are some physicians. For over a dozen years we have tried handling them on the statutory roll. Our conclusion as a result of that experience is that we have in these food and drug inspectors a particularly good example of the way statutory positions work out when you have to deal with positions, places, and duties which are not routine but which require vision, initiative, and energy. There has been a constant and steady drain on the staff of food and drug inspectors, so that we have been losing steadily the most competent and retaining those that were not so competent, with the result that at one time we had as many as 15 vacancies in the force of food and drug inspectors. When you consider that we have 53 inspectors altogether, and with these 53 have to cover the whole United States, you can see that it is unfortunate to be constantly losing men and having constantly to train them. These positions, in my judgment, should never have gone upon the statutory roll in the first place.

The understanding with the department, as I have been informed, in former times when the Committee on Agriculture was handling the appropriations, was that positions which were expert and not clerical and subclerical were not to be placed upon the statutory roll but upon the lump-sum roll. The food and drug inspectors should never have been placed upon the statutory roll because they can be classified justly as technical positions. The men have to acquire and have particular and special knowledge in the food and drug industries. Since these are fundamentally important positions, positions that can make or break the enforcement of the law, since they are really technical positions, and since our experience has been that the inflexibility of the statutory roll makes it impossible for us to keep the best men, we are recommending this transfer from the statutory to the lump sum. This will enable us to recognize particular worth in inspectors and retain those of particular worth in a manner impossible to accomplish at the present time with the statutory roll. It is not anticipated that there will be any extensive promotions as a result of this transfer. It is merely that these positions are so important that we think it good administration to ask the committee to give us that flexibility which will enable us to retain the exceptional man instead of at the present time being unable to do so because promotion can not come except through death or resignation in a higher position.

TRANSFER OF WHARF EXAMINERS FROM LUMP SUM TO STATUTORY ROLL

Mr. ANDERSON. On that theory, let me ask you why you transfer five wharf examiners from the lump sum to the statutory roll?

Dr. ALSBERG. We do that because they are not exactly the same kind of people. The wharf examiner, Mr. Chairman, is essentially an inspector whose work is largely limited to the examination of imported foods and drugs. These men are located in such places as New York and Boston. They are not of the same caliber as these inspectors. They work under immediate supervision of the men in the laboratories and do not have to travel on the road on their own. They are stationed at New York, San Francisco, and Boston, and work under the immediate supervision of the chiefs of those stations. Their work, as you point out, is similar, but they do not have the same responsibility. You know very well our views on the statutory roll. We have not suggested the transfer of these men merely because the committee we felt would not look with favor on a recommendation to transfer them.

Mr. ANDERSON. The reason I asked the question was because I did not appreciate any difference between the rule which would apply to a wharf examiner and a food and drug inspector, and it seemed to me the transfer of wharf examiners from the lump-sum roll to the statutory roll, and then the proposal to transfer the food and drug inspectors from the statutory roll to the lump-sum roll was inconsistent.

Dr. ALSBERG. There is, I think, a sound point there, but their duties are somewhat different from those of the inspectors. They used to be called samplers and their job is to go down on the piers and sample import shipments. They do not have to do what the inspectors have to do. The inspector goes out under his own supervision for a month on an inspection trip. He acts at times like a detective. He has to work up evidence. These wharf examiners go down on the wharves and draw samples from importations. It is not a purely mechanical sampling, because they have to be familiar with the way the goods run. It is quite obvious that with the thousands and thousands of shipments that come in, we can not completely examine every one of them. Their job is to inspect each shipment and to draw a sample of every one that looks suspicious and bring such samples in. To that extent they have to exercise judgment. They do not have to exercise initiative like an inspector who goes out into a town 100 miles away from his station gathering evidence against a manufacturer. There is that difference in their functions.

Is there anything further, Mr. Chairman, on the statutory roll that would not be covered by this tabulation?

Mr. ANDERSON. There are some new places submitted which you had better explain, perhaps. I think the first one is item No. 21, one storekeeper, \$1,600. That is covered under the note, in a general way, but I think perhaps it ought to be covered somewhat more specifically.

Dr. ALSBERG. That position is now filled by a man by the name of Strong, who has the status at the present time of a laboratory helper.

Mr. ANDERSON. What salary does he get?

Dr. ALSBERG. \$1,200 at the present time. This involves a promotion of \$400 for him. He has been in the service of the bureau for a

great many years and is the man who has charge of the storeroom. It is his job to receive the chemical apparatus, chemicals, and other supplies, record them, see that they are kept under lock and key, and issued on requisitions as needed, so that he has a very responsible position. He has been with the bureau for a great many years and has been getting only \$1,200. His actual duties are those of storekeeper, but his title has been that of laboratory helper hitherto. This represents a promotion of \$400 for him. His work requires a knowledge of chemical apparatus which he has acquired through long years of experience.

Mr. ANDERSON. In item No. 22, you propose an increase of four in your laboratory helpers, and in item No. 23 an increase of nine. Is this simply a part of this rearrangement, or does it represent a real increase?

Dr. ALSBERG. That is a part of the rearrangement, with, of course, an increase in the salaries of some of the helpers.

Mr. ANDERSON. Does that involve an increase in the number?

Mr. ALSBERG. No, sir; it involves a decrease in the number.

Mr. ANDERSON. In item No. 38 you have submitted one skilled laborer at \$1,020.

Dr. ALSBERG. That is involved in the general rearrangement which is described in note 4. That will, of course, appear clearly in the tabulation we will give you.

Existing roll.....	\$426,190
New roll as submitted.....	351,090
Decrease in statutory-roll paragraph.....	75,100

	Decrease.	Increase.
81 places dropped.....	\$73,460	
34 new places in lieu of 81 places dropped.....		\$70,080
4 promotions in specific positions.....		2,800
31 food and drugs inspectors transferred to lump fund for food and drugs act, with a reduction in the statutory roll and a corresponding increase in the lump fund for food and drugs act, making no change in the total appropriations for the bureau as a whole.....	92,840	
13 wharf examiners, mechanics, clerks, etc., transferred from lump funds to statutory roll, making an increase in the statutory roll, with a corresponding decrease in the lump funds, the net effect being no change in the total appropriations for the bureau as a whole.....		19,320
	167,300	92,200

Total decreases submitted.....	\$167,300
Total increases submitted.....	92,200
Net decrease in statutory-roll paragraph as a result of all changes submitted.....	75,100
Net increase in lump funds as a result of all changes on statutory roll (\$93,840—\$19,320).....	74,520
Net saving to the total appropriations for the bureau as a whole by all changes on statutory roll.....	560
Actual net saving on statutory roll, \$560.	

NECESSARY EXPENSES FOR CHEMICAL APPARATUS, CHEMICALS, AND SUPPLIES, ETC.

Mr. ANDERSON. If there is nothing further on the statutory roll, we will take up the next item. There is a change in the language of item No. 61, on page 147.

Dr. ALSBERG. That change in language, which consists of inserting the words "including cooperation with such persons, associations, or

corporations as may be found necessary," for carrying out the investigations and work herein authorized, does not represent any really new practice on the part of the bureau. We have always, of course, been cooperating in our work with the industries in one way or another, and that cooperation has usually been recognized in the language of individual appropriations. The object of this additional wording, which is not very important, is to recognize that this cooperation applies generally to all the appropriations.

Mr. ANDERSON. Does this involve contributions on the part of outside people to the salary or compensation of employees of the bureau?

Dr. ALSBERG. There is not anything definite in mind, Mr. Chairman. I mean we have no specific cooperation that we are considering. I can only say that there never has been at any time since I have been in charge of the bureau any such contribution from anybody on the outside, and I believe, myself, that to accept such contributions is exceedingly bad administration.

Mr. ANDERSON. The reason I asked the question, Doctor, was this: You know there is now a general prohibition, with some exceptions, against contributions on the part of outside people to the salaries of employees of the Department of Agriculture or any of the other departments, so far as that goes, and I do not want to put into this language a provision which might have the effect of repealing that provision.

Dr. ALSBERG. That was not thought of at all. If this provision has that effect, it ought not to go in. That is the way I feel about it.

Mr. MAGEE. It does not add anything, anyhow, does it, Doctor?

Dr. ALSBERG. It is not intended to add anything, except it is intended to cover what is covered in the specific appropriations and to make it general. If it involves any such thing as is now prohibited, it ought not to go in, and there was no intention of covering that at all.

INVESTIGATIONS RELATING TO THE APPLICATION OF CHEMISTRY TO AGRICULTURE.

Mr. ANDERSON. Take up item No. 62.

Dr. ALSBERG. "For conducting the investigations contemplated by the act of May 15, 1862, relating to the application of chemistry to agriculture; for the biological investigation of food and drug products, and substances used in the manufacture thereof, including investigations of the physiological effect of such products on the human organism." As the note states, there is an increase in this item of \$30,000. This item represents the original, fundamental basic appropriation of the bureau when the bureau was a division way back before the department was reorganized. It covers the work that is done in a research way in what is known as agricultural chemistry generally. Before last year there were several minor appropriations, but the Committee on Agriculture deemed it wise to combine those several appropriations into one general appropriation for which \$70,400 was appropriated. The object of this increase is to make it possible to carry out a considerable series of researches and investigations for which there is an active demand from various

sources, but which the bureau is now not in a position to adequately finance.

A few of those lines of work are recorded here. They involve investigations on the chemistry of proteins and foodstuffs, particularly with reference to their value in nutrition. This work differs fundamentally from any work that is going on in any other branch of the Government service. The Bureau of Animal Industry, for example, is interested not at all, or at least, is doing no work, on the fundamental principles that are involved in the nutrition of animal and human beings. For example, under this work the Bureau of Chemistry has investigated the nature of the nitrogenous ingredients of a large variety of foodstuffs, concerning which but little was known before. It has investigated the value of these ingredients and foodstuffs in the diet, and has made very important contributions to the whole science of nutrition, which can be and are being applied practically in human dietaries and in animal production. It might interest you to see the type of investigation that has been done under this appropriation [exhibits photographs].

These are some reprints relating to our protein work. Most of the results of this investigation have been published in scientific journals. I am going to come back to that practice of publishing in the scientific journals in a moment. You see, in these investigations we have determined the qualities of the nitrogenous constituents of such things as soybeans, grain and sorghum, the peanut, and similar products which are exceedingly important in the diet and concerning which little was known before. I can give you an idea as to how that sort of information can be applied practically. We have, for example, after having learned of the nutritive properties of the peanut, carried on experiments with white rats, the white rat being the standard animal for this kind of work, and have determined that such an animal can be kept alive, will grow normally, and will reproduce through the use of no other nitrogenous material than that of the peanut. The practical application was to make a loaf of bread from 25 per cent of peanut flour, from some mineral salts that are lacking in wheat, from wheat flour, and with some butter as shortening, giving a palatable loaf that constitutes a complete diet. You can take a white rat from the point of weaning, raise it to maturity, and have it produce and rear young on a diet which consists of nothing but this particular bread and water. That may seem like an academic thing, but, as a matter of fact, it is studies of this kind which are going to make the feeding, both of animals and human beings, much more efficient, because an animal on a diet like that will grow faster and grow normally.

As a matter of fact, this particular kind of bread—and similar breads made up as a result of our investigations—is now being recommended for child feeding. The same principles, of course, apply to stock. You can not raise an animal on corn or similar grain if they are the sole articles of diet, as every farmer knows. What we have been endeavoring to find out through these investigations is wherein such a bread is best fitted for feeding and wherein it is lacking. That gives us a basis on which we can fix up a diet, a ration, which will be perfect and which will enable one to produce an animal more rapidly and at lesser cost.

PUBLICATION OF INFORMATION THROUGH JOURNALS, ETC.

Mr. BYRNES. How do you communicate the results of such experiments to those who should apply them? By what means; by these bulletins?

Dr. ALSBERG. That is done in various ways. In the first place, the results are published in scientific publications—that is, we have been preparing statements for the technical press interested in them. For instance, we have published work of that kind in journals that go to teachers of home economics, that go to specialists in children's diseases, and also in women's journals. Of course, we have also been publishing bulletins. The hardest thing in the world you have put your finger on, and that is to get this kind of thing across promptly. We endeavor to do it by publications in the popular press. You have raised this question, and this is perhaps as good a place to consider it as any. I have been asked by the Secretary to discuss this matter of publications. The Bureau of Chemistry makes it a practice—it may not meet with your approval, in which event I would like to have your judgment—not as a rule to publish the results of its purely scientific researches in Government bulletins, and it does not do so for a number of reasons. One reason is that the publication of papers like some of these, which are purely chemical papers, in a Government bulletin which is distributed to people who are not chemists, represents, to a certain extent, a waste of Government funds.

Mr. BYRNES. You do not have to argue that. We will all admit that on its face without any further argument.

Dr. ALSBERG. In the second place, you do not reach the public that you want to reach, who in that case are scientists.

Mr. BYRNES. It is apparent that anybody who sends out a Government bulletin like this [indicating] should be prosecuted for pure criminal waste, because the average man who gets it would not understand the first page of it. We will all agree on that.

Dr. ALSBERG. I am glad we are in agreement. We are publishing that sort of thing in the scientific press. Where we have a thing which interests a certain branch of the trade, say the bottlers, we are publishing that in the bottlers' journal; where we have a thing that interests the flour millers we are publishing that in the flour-milling journals, and we are reserving for publication in Government bulletins material which is designed for the layman.

Mr. BYRNES. It is clear to anybody that that should be done, but the results of an experiment such as you have described in the way of peanut flour is a matter which could be communicated to the people, just as you are communicating to us.

Dr. ALSBERG. It is, and that is being done.

Mr. BYRNES. On the other hand, it would be ridiculous to send out a document of this kind indiscriminately.

Dr. ALSBERG. What I was coming at is that we are not sending out that kind of a document, although it has been done and is being done by a good many Government bureaus, but the scientific investigations on peanut bread, the tabulation of weights of the animals, and the whole theory of it we are publishing in a scientific journal, and then we are republishing what the layman can understand in a

Government bulletin or a press article. The result is that the Bureau of Chemistry publishes each year but seven, eight, or nine bulletins, not over a dozen. The bulk of our material, of a purely scientific or technological nature, is published in scientific, trade, or technical journals, and the popular portion of it, that which is designed for general use, is the only part we publish as an official document. This volume, which I have had bound for my own use, represents the publications of the Bureau of Chemistry for the fiscal year 1919-20, the publication of which did not cost the Federal Government a cent, but which in each case was published through that particular medium, whether it was a chemical journal, whether it was a bottlers' journal, a millers' journal, or an oil crushers' journal, where we felt we would reach those people who could understand and appreciate the work. This represents one year's output of the Bureau of Chemistry, printed on the outside.

Mr. MAGEE. In other words, you furnish articles to these scientific journals for publication?

Dr. ALSBERG. Exactly. These scientific journals, of course, never pay for the articles. The bulk of their articles are furnished by our research men and our people do not get a cent to eke out their salary in that connection. Occasionally a trade journal wants to pay our people, but they are not permitted to accept pay. When we issue material to the trade journals we usually send the same material simultaneously to a whole series of them, so that nobody gets a scoop and we can not be accused of playing favorites. What I am leading up to is that while in my judgment it would be contrary to good administration to publish that sort of material in Government bulletins, there is a small demand for that information; we get a certain number of inquiries from people to whom that kind of material means something. At the present time we have no means of giving them that information; all we can do is to refer them to the journal, and if they do not happen to be located in a town with a library where they can get it they must go without that information. Most of our scientists, however, buy reprints of scientific papers and pay for them individually, but we can not expect our scientists to do that for the purpose of distributing the information in Government correspondence. Therefore, the Secretary, on the recommendation of myself and some other chiefs of bureaus, has inserted a small item on page 311, which is what I am leading up to. That authorizes the purchase of reprints just like those you see there and like these you see bound up here [indicating].

Mr. ANDERSON. Can not that be done under your general appropriation for publications?

Dr. ALSBERG. As I understand it, there is a specific law—I am not familiar with the details—which makes it illegal to have printing done outside, and which makes it illegal for the Government to spend money in that way.

Mr. BYRNES. You can not pay for any newspaper advertising.

Dr. ALSBERG. No; and we have an opinion from our solicitor that in view of these statutes we have no authority to do this sort of thing, because you can see very well that this thing might be abused, even this thing; you can see that.

Mr. ANDERSON. The proposition, I take it, is just this: The number of these publications that you would use is so small that it would

not pay to have this work done at the Government Printing Office, even if it could be done there, and all you want is a small fund out of which you can purchase a small number of reprints of these articles which appear regularly in the scientific and trade journals, that being a cheaper method, you think, than having them printed in the regular way at the Government Printing Office?

Dr. ALSBERG. Exactly. This is not an additional appropriation, however, but simply an authorization to use not to exceed \$2,500 from the regular appropriation.

Mr. ANDERSON. Considering the number for which you would have use?

Dr. ALSBERG. Yes.

Mr. MAGEE. I do not just understand what you want to do. Suppose you submit an article to a scientific journal and it is printed—is it your idea to get a fund so that you can reprint that article?

Dr. ALSBERG. No.

Mr. MAGEE. Then you want to get copies of the printed article?

Dr. ALSBERG. Yes.

Mr. MAGEE. Could you not get those from the journals themselves?

Dr. ALSBERG. That is what it is proposed to do.

Mr. MAGEE. How many copies of an article would you want?

Dr. ALSBERG. Fifty, 100, or 200.

Mr. MAGEE. And what would those cost you?

Dr. ALSBERG. Well, a 16-page article would cost, for about 100 copies, from \$5 to \$10.

Mr. MAGEE. It would be just the price of the copy of the journal, would it not?

Dr. ALSBERG. We would not buy the whole journal.

Mr. MAGEE. Why not buy the whole journal? It would not cost you much more.

Dr. ALSBERG. The present custom is this—

Mr. MAGEE (interposing). I want to get at the facts myself. If I delivered an address and it was published in the newspapers, and I wanted some copies of it, I would order 25 or 50 copies of the newspaper at a cost of 2 or 3 cents apiece?

Dr. ALSBERG. That is true, sir.

Mr. MAGEE. What is the ordinary price of scientific journals?

Dr. ALSBERG. Well, the ordinary price of such journals is considerably more than that.

Mr. MAGEE. How much—10 cents or 25 cents?

Dr. ALSBERG. No; it would run from 50 cents to \$1.

Mr. MAGEE. For each copy?

Dr. ALSBERG. Yes. May I explain what the custom is with reference to that? If an author submits a paper to a scientific journal and it is accepted the editor writes back, "How many reprints do you want?" The author writes back, "I want 100 or 1,000 copies," or whatever number it is. Then when the type is set up, instead of sending you the whole copy, they just run off extra galleys of that particular article and send them to you.

Mr. MAGEE. Would not the publisher of such a journal be entirely willing to give you a few reprints?

Dr. ALSBERG. They do very frequently, but not always.

Mr. BYRNES. You say these authors submit these articles and in many cases could secure compensation for them, but do not?

Dr. ALSBERG. Not for that kind of an article.

Mr. BYRNES. A man could say, "I am contributing this article and asking no compensation for it, so I think you could very well furnish me with some reprints."

Mr. ANDERSON. But I think the Government ought to pay its way on this sort of thing.

Dr. ALSBERG. The Government scientists in that case are much like university professors; the university professors have to pay for those reprints and they think the Government scientists ought to pay.

Mr. BYRNES. It has been the custom to pay?

Dr. ALSBERG. Yes, sir.

Mr. BYRNES. And they expect you to do it?

Dr. ALSBERG. Yes. I dare say that if one wrote a personal letter to the editor of such a journal and explained that it could not legally be done and said "Won't you be good enough to make an exception in our case?" that they would send 50 or 100 reprints. But you must consider that this kind of a journal is run very commonly without profit.

Mr. MAGEE. You would not want so many reprints for your department, would you?

Dr. ALSBERG. Fifty or 100 copies would cover everything we need.

Mr. MAGEE. Do you need any more than that for official use?

Dr. ALSBERG. No.

Mr. MAGEE. Why would you need as many as 50 or 100 copies?

Dr. ALSBERG. In the course of three or four years there would be enough inquiries for such an article as to make it necessary to have that many.

Mr. MAGEE. Then you need them for distribution?

Dr. ALSBERG. Yes.

Mr. MAGEE. Then you do not exactly need 50 or 100 copies for official use? You would not need 50 copies to file in your department?

Dr. ALSBERG. When I said "official use" I meant copies for distribution. A man might write in and say, "Have you any information on such a subject?" If we have printed information we are expected to send him that printed information, and that is what I meant.

Mr. MAGEE. That is for the public?

Dr. ALSBERG. Yes.

Mr. MAGEE. Getting your reprints to the public?

Dr. ALSBERG. Yes.

Mr. MAGEE. Not for official use, but for private use?

Dr. ALSBERG. Well, I do not know that the use is any more private than if a Member of Congress sends down to the department and wants 100 bulletins on a certain subject to distribute to his correspondents.

Mr. ANDERSON. It seems to me that when you are spending thousands and hundreds of thousands of dollars to get this information that it is not very good economy to keep it locked up somewhere in the bureau, where it is not of any use to your own scientific people, to the scientists generally, or to the public, so far as the public may be interested in it. It is simply a question, as I see it, of the cheapest method of getting the best utilization of the work done and on which you are spending a lot of money.

Dr. ALSBERG. That is the thought in this particular case. The whole sum is not to exceed \$2,500 for the entire department. I can

get all the reprints I can use in the course of a year for the Bureau of Chemistry for not to exceed a couple of hundred dollars.

Mr. MAGEE. Nobody could reasonably say that it was not before the public if it was published in a scientific journal. It would be untenable to contend that it is not before the public and spread broadcast from the time it is published. Your specific appropriation here is not for distribution upon private inquiries but it is for official use: that is the language of the authorization which you ask. If you want it for distribution to Tom, Dick, and Harry then you would have to change the language of your request. The language is:

That not to exceed \$2,500 in all from lump sum appropriations provided by this act may be used for the purchase, for official use, of reprints of articles contributed by the various branches of the department to scientific, technical, and trade journals.

That does not provide for distribution on private inquiries.

Mr. ANDERSON. Here you have a scientific organization with a lot of scientific men in it who normally want to keep up, and ought to keep up, with the scientific developments in agriculture, chemistry, and otherwise. It is just a question whether these men are going to have to subscribe for all these journals and pay for them or whether you are going to have an easy method of getting this information and disseminating it among your organization: is not that it?

Dr. ALSBERG. That is the point.

Mr. BYRNES. My objection goes the other way. I believe that if the result of an experiment is worth publishing at all, and if there is anything in it that can be of service to the average man, that it ought to be published in some place where he could see it.

Dr. ALSBERG. Well, we endeavor to do that by publishing bulletins covering the results of the scientific work. For instance, take the result of a series of investigations in the technology of baking we have made—very intricate investigations on the growth of yeast, the qualities of flour, and the conditions of baking. That is the kind of work which only a chemist employed in a mill or large baking establishment can understand, and we publish it in the technical journals. The scientific end of it having been published, we are now preparing to publish a bulletin giving a general account of these technology investigations such as anyone can understand.

YEAST PROPAGANDA.

Mr. BYRNES. Are you responsible for the propaganda that is now being carried on in favor of yeast?

Dr. ALSBERG. No, sir; I am not.

Mr. BYRNES. You know there is such a propaganda?

Dr. ALSBERG. Yes: the Fleischmann Co. started it. That company controls—I can not give you the figures at the present time, but there was a time when the Freischmann Co. controlled the production of something in excess of 90 per cent of all the baker's yeast produced in the United States. The Fleischmann Co. formerly got its baker's yeast as a by-product of its distilling business, and I suppose the lessening of distilling has brought about an effort to increase yeast consumption. That is merely a surmise. However, it is endeavor-

ing to create a new market for its yeast, and that may have something to do with it.

I have been talking only about these protein investigations under this item 62 because I wanted to make them clear.

PROTEIN INVESTIGATIONS.

Mr. ANDERSON. What are you spending on these protein investigations now?

Dr. ALSBERG. I think the total is about \$15,000 at the present time.

Mr. MAGEE. You mean of your present appropriation?

Dr. ALSBERG. Yes; of the present appropriation. You see, there was originally a separate item for that investigation, but last year it was deemed wise to combine it with other items, and the total of the items is \$70,400. I regard these protein investigations as among the most important and fundamental that are being conducted in the United States to-day, and that is why I have dwelt so much upon them, so as to make it clear that this represents neither a duplication nor an infringement on some of the ration work that the Bureau of Animal Industry is doing. They are concerned with the immediate and practical application of rations for stock of one kind or another, while we are at work upon the fundamental principles of which the Bureau of Animal Industry's work is an application.

INVESTIGATING METHOD OF MANUFACTURING GAS FOR HEAT, LIGHT, ETC., FROM STRAW.

There are contemplated under this appropriation a considerable number of other things. There are investigations being carried on upon milling and baking; for the Bureau of Plant Industry, on the chemistry of plants, we are doing a large amount of work for them in connection with their cereal investigation and a series of similar investigations. It is also proposed to use a part of this item, if the increase is granted, to see whether or not there can be made any practical application of the process for utilizing straw in the Northwest, where it is now burned without any particular use being made of it. Of course, the proper thing to do with straw on the average farm is to feed it to your stock: there is not any question but what that is the way to use straw; but, as Mr. Anderson knows, there are large sections of the country in which that is not done; there is not enough stock, and there are other reasons. For a great many years to come there will continue to be large quantities of straw burned.

We have done some preliminary work, following up some work that was done in Saskatchewan by the Canadians, which indicates that it might be possible to utilize these waste products on the farms where they are concentrated in considerable quantities to furnish light and power in small scale units. There are a number of investigations of that kind which are contemplated if this increase is granted.

COLLABORATION WITH OTHER DEPARTMENTS.

The next item, No. 63, involves no change. That item covers, to a certain extent, but not completely, the chemical work which the other branches of the Government ask us to do. There is hardly

another branch of the Government that does not ask us at times to do chemical work for it. The Post Office Department, for instance, asks us to do a great deal of work in connection with their effort to combat postal frauds. There will be patent medicines, and scores of things of that nature, which are passing through the mails, which they send to us for examination; our experts examine them and if cases are instituted our experts act as witnesses for the Post Office Department. We are cooperating in the closest manner with the Post Office Department to hit a lot of the frauds that we can not touch under the food and drugs act. You see, the food and drugs act provides that a medicine is misbranded if it is shipped in interstate commerce and has on its label or on the package any claim about its curative effect which is not warranted by the composition of the medicine.

We prosecute them, we get judgment against them, and in some cases they take the objectionable statement off the label; but they continue to do business by transferring their fraudulent representations to circulars, printed matter, and advertising that goes through the mails. In such cases the Post Office very frequently steps in and we cooperate with them. They sometimes can suppress a fraud of this kind which we have failed to suppress under the food and drug act. Then, of course, the Army, through its various quartermaster headquarters, is constantly asking us to examine food and drug supplies that are purchased by the zone quartermasters. There is a tremendous lot of work of that kind which we are doing for the Army scattered all around the country. As you know, we have under the Bureau of Chemistry 20 branch laboratories outside of Washington, as we have to have food and drug laboratories in the principal cities and ports of entry in the United States. The War Department uses these laboratories and our men do the chemical work on the deliveries that are made to the War Department when those deliveries involve foods or drugs. We do not do a great deal of work for the War Department in other lines than food and drugs. The same thing applies in a lesser degree to the Navy Department. It also applies to the Department of Justice. The United States attorneys over the country when there is a chemical analysis involved in a case, it may be a case of bootlegging or it may be the stomach contents of some one who is suspected of having met with foul play——

Mr. MAGEE (interposing). You are called upon to furnish the evidence?

Dr. ALSBERG. We are called upon to make the examination.

Mr. BYRNES. By what department?

Dr. ALSBERG. The Department of Justice. The United States attorneys and our laboratories are usually all in the Federal buildings. In many instances the United States attorney is handling a food case with our local man. He knows him, and the natural thing for him to do is to walk across the hall and say, "Bill," or "Jim, make this examination for me." Of course, there is a lot of that being done, and \$14,000 does not anywhere near completely cover the cost of doing that work; but we can not very well refuse to do it. Also, we have been doing until recently a great deal of work for the prohibition people. They asked us to handle it because they were not yet equipped to handle it.

Mr. ANDERSON. Take up the next item, please.

INVESTIGATION OF THE HANDLING OF POULTRY, EGGS, FISH, ETC.

Dr. ALSBERG. No. 64. There is no change. This item involves work that has strictly to do with the handling of fish, poultry, and eggs; their transportation and cold storage; the inspection of oysters; their sanitary conditions; and similar food products.

Mr. BYRNES. I do not see how that is something for the Bureau of Chemistry to handle. It does not require any technical knowledge for the Bureau of Chemistry to investigate the handling of eggs, fish, and chickens?

Dr. ALSBERG. While this work is mainly on poultry and eggs, it involves the changes and checking up on methods of handling by chemical and bacteriological means to determine what are the best conditions for refrigeration and transportation. This involves laboratory experimentation. I might say for the benefit of this committee that the matter of modifying this appropriation and readjusting it with the Bureau of Markets, which carries on another phase of this work, is under consideration in the department.

Mr. BYRNES. It seems to me that is a question of marketing. If you want to carry on an investigation as to eggs and poultry, you do not have to make that a continuing investigation from year to year, because some time or the other you will ascertain in the department the chemical changes of eggs while in transit and be able to discontinue an investigation of that kind?

Dr. ALSBERG. As a matter of fact, a great many of these items, as you undoubtedly know, have a history behind them.

Mr. BYRNES. They all have, I know.

Dr. ALSBERG. Yes; but if you have the time I should like to explain the history of this item.

Mr. BYRNES. I am not particularly interested in the history, but what is the necessity of your bureau now continuing investigations in the handling of chickens and eggs?

Dr. ALSBERG. That is a part of what is done under this item. The item could, if that were deemed wise, be transferred in part at any rate to the Bureau of Markets and that is now under consideration. If you mean in a sense that it is marketing, that is quite correct. When this work began there was no Bureau of Markets, and it started entirely from a different angle. It started originally from the angle of the enforcement of the food and drug act. There was this tremendous prejudice against cold-storage eggs, a prejudice which was justified because in those days there was a great deal of very bad stuff that went into cold storage. The food and drug act was new. The whole work was started from that angle and naturally it got over into the question that where bad stuff was being handled, there was an economic loss, people were defrauded and there was a violation of the law. What was the remedy in that connection? We commenced a line of work on the method of improving the handling of poultry and eggs. You are right when you say that the work at present is not entirely chemical and a part of it could be transferred to the Bureau of Markets. That transfer has been under consideration and will undoubtedly be made.

Let me tell you, for example, that 15 or more years ago the only method of shipping poultry to market was to kill the birds and draw

them and put them in barrels with lumps of ice and ship them, so that they sometimes arrived improperly chilled, swimming in a mess of molten ice contaminated with the manure from the feet, the entrails, and so on. That was insanitary, and so the question of improving the methods of handling arose. Then we had to develop, as you know, a small cold-storage chill box, because otherwise the whole handling of poultry might be put into the hands of the great packers. It was necessary, therefore, to develop the small chill box. We succeeded in putting before the country one that would cost \$800 to build. We have gone out among the poultry handlers, and in the State of Indiana alone there are some 25 small chill rooms that are now shipping poultry in first-class condition. The shippers are getting a few cents a pound above their competitors who are shipping wet, packed in ice. It has been an educational campaign to improve the whole industry. I think a very valuable work has been done in the conservation of food.

Mr. BYRNES. Is not the Bureau of Markets now carrying on the same work?

Dr. ALSBERG. No, sir: because we have an agreement with them, though they have authority to carry on some of it.

Mr. ANDERSON. I do not know what has been done in the case of chickens and eggs, but they are doing very similar work with reference to vegetables.

Dr. ALSBERG. That is true.

Mr. BYRNES. I notice that they have an item, "For acquiring and diffusing among the people of the United States useful information on subjects connected with the marketing and distributing of farm and nonmanufactured food products and the purchasing of farm supplies independently and in cooperation with other branches of the department, State agencies, purchasing and consuming organizations, and persons engaged in the transportation, marketing, and distributing of farm and food products." Under that language they could do exactly what you do?

Dr. ALSBERG. They could, but by an agreement they are not doing it.

Mr. MAGEE. Do you not think that you have heretofore investigated sufficiently so that the practical results which have been obtained are well known and there is no trouble now about these shipments?

Dr. ALSBERG. If you mean that we can tell anyone who wants to go into the shipping of poultry and eggs how to do it efficiently, economically, and satisfactorily, yes: we know that, but what we have been doing to a very large extent under this appropriation has been propaganda work to get it across to the people in the business. For example, a man who has been shipping poultry and eggs in a small way and who wants to go into it and do it right—he is having losses because his eggs arrive in a bad shape at the market—may come to us for our help and we give him that help, we advise with him and assist him.

Mr. MAGEE. If you have gotten beyond the point of investigation, if you have the knowledge, then the investigation has ceased and it is simply a dissemination of the knowledge?

Dr. ALSBERG. It is very largely dissemination of knowledge, but there are some points that still have to be investigated. For instance, there is an investigation like this: The present method of packing

eggs is in straw board containers—fillers and flats, made of straw-board. You may not know it, but an egg is a good deal like butter or cream. You put eggs into a refrigerator with onions or anything like that and those eggs acquire the flavor of any thing in the neighborhood. In storage the eggs absorb the straw flavor of the fillers and flats and one of the things that we are looking into is the possibility of developing a satisfactory substitute for the strawboard fillers and flats. If that could be done it would mean a tremendous lot to the cold storage egg handling industry. We have not solved it. We have tried a score of things which are not satisfactory.

Mr. BYRNES. They keep too much stuff in cold storage now.

Dr. ALSBERG. That is an economic proposition over which we have not any control.

Mr. ANDERSON. Please take up the next item, No. 65.

FOR INVESTIGATION OF RAW MATERIALS FOR COLORING, ETC.

AID TO DYE INDUSTRY.

Dr. ALSBERG. This appropriation is known as our color appropriation. The appropriation was made and became effective for the first time on July 1, 1916, for the purpose of carrying on investigations for the assistance of the fine chemical and dye industries. The appropriation therefore has been in force for four years and a half and a great deal of very valuable work has been done with it. We have published a very large number of important researches important to the industry and we have developed some new processes which have become very important. The guiding thought in connection with this work is to carry on fundamental researches on raw materials, on the reactions that chemists use in making dyestuffs and similar substances and to study the fundamental basis of these reactions. The industrial chemists do not as a rule do such work themselves. When they do it themselves they only do it partially and they keep very quiet about it so that nobody knows the results of it. With this appropriation we have been able to do some work which is recognized by the dye industry as among the most useful work that has been done and which has been of very material assistance in helping to start and support the dye industry.

I hesitate to go into the matter of two of the processes that have been developed, but, perhaps, for the benefit of gentlemen who are not familiar with the work, I might say that one of the processes which has been developed as the result of this work is now being used by a number of concerns in the United States. It is reported that there is being manufactured more than 100,000 pounds of one of the most important intermediates for the dye industry, and there is, in fact, now exportation of that particular intermediate. We furnished information and have done the research work which I think the industry itself recognizes as being of fundamental importance. The change involved here is merely an increase of the incidentals to this work. You run into matters that are of interest in medicine, and in order to carry that work forward we want authority, not to start anything new in a medicinal and technical way, but to carry out anything that develops in connection with the work along this line.

Mr. MAGEE. The new language is actually restrictive unless you use the word "include"; the language would not be as broad as it is without those words.

Dr. ALSBERG. If they are restrictive we do not want them. Take one substance, phthalic anhydride, which is now being produced in quantity in the United States by a process invented by the bureau and at a price, without having in mind the labor conditions, at which it was generally sold before the war. Phthalic anhydride may be used to make indigo or other dyes. Phenolphthalein is made from phthalic anhydride. It is one of the most widely used laxatives today. It is replacing the vegetable laxatives. If this language is too restrictive or too broad, it should not go in in that manner.

Mr. ANDERSON. As I recall, at the time the item was put in the committee had a notion, perhaps erroneous, that this was an item which would not necessarily be continued, that the preliminary work would be done and some help would be given to the industry in starting, and that when this industry was on its feet some of this work would be discontinued. Of course, I do not know how the committee will feel about it.

Dr. ALSBERG. Of course, that is a matter of public policy which is up to the committee. I can say to the committee that this work has been of very great value to the industry and that it will continue to be of very great value to the industry just as long as the committee desires to continue the work. The subject is never finished; there are constantly improvements, new processes, and new dyes. Foreign chemists, Germans, English, and French, are developing new things. You can not have too much research in the chemical industries.

If this committee wants to take the position that has been taken at times in Congress that this is something like the tariff, which it is not—I merely used a metaphor—that it might be temporarily established to get an infant industry on its feet, the committee would in that case sooner or later discontinue the appropriation. If, however, the committee wants to take the position that this is one of the most basic industries and that it is of importance as a matter of defense through the interrelation with the dyestuffs and the chemical warfare and explosives manufacture and that too much for the promotion of the industry can not be done continuously, then the committee will continue this appropriation.

Mr. MAGEE. I suppose the way you look at it is that a subject of this kind must necessarily always be progressive?

Dr. ALSBERG. That is the point.

Mr. MAGEE. And that you never reach the peak?

Dr. ALSBERG. No manufacturer of dyestuffs would assume for a moment that he could stay in the business and compete unless he had a considerable staff of chemists constantly doing research. We are trying to do for the industry those things which the industry does not do for itself or keeps "dark" if it does do them. It is a matter of policy with this committee whether you want the Government to back this industry in this way or not. That is the question for you gentlemen to decide.

NO DUPLICATION OF WORK DONE BY BUREAU OF STANDARDS.

Mr. BYRNES. Permit me to ask you this question: This is not an agricultural purpose, and I am wondering whether similar work is being conducted by the Bureau of Standards?

Dr. ALSBERG. No, sir. The Bureau of Standards is not conducting any work of this kind.

Mr. MAGEE. It is purely chemical?

Dr. ALSBERG. It is a question of what you conceive to be the fundamental functions of the Bureau of Standards and the fundamental functions of the Bureau of Chemistry, respectively. The Bureau of Chemistry started out by being the chemical agency for the entire Government service and always has, from its beginning, done all kinds of chemical work. It is not to-day, it never has been asked by Congress nor has it been Congress's intention to limit its work to just the chemistry that applies to agriculture. The Bureau of Chemistry to-day is doing a very large variety of work which is technological. The reason this particular work was placed in the Bureau of Chemistry is that it is the work of organic chemists, chemists who study the chemistry of compounds of carbon, the compounds that are characteristic of all living things. The Bureau of Chemistry has to deal with the chemistry of living things. The result is that it does a greater number of chemical researches in organic chemistry, the chemistry of carbon compound, than all the other bureaus in the Government service together. It is therefore in a position to handle this particular work better than any other bureau. It is not purely a nonagricultural matter, as you might think, because, who were the people who were hit the hardest when they could not get dyes—it was the cotton farmer and the wool-grower.

The appeals originally to the department for this work and I think to the committee came not so much from the chemical industry as from the cotton grower and the woolgrower. This involves in no sense standardization. It involves in no sense grades. It involves in no sense the work which the Bureau of Standards was doing before the appropriation was made. A consultation was had with the Director of the Bureau of Standards and he promised, and has kept that promise, that he would not enter this particular field unless specifically instructed to do it by Congress. He has not done so. There is cooperation on this item with the Bureau of Standards only as to the question of testing colors, and only then, we asked the Bureau of Standards to do that particular piece of work.

Mr. ANDERSON. You did not give me specifically the purpose for which you ask the increase in this item?

Dr. ALSBERG. The increase in the item is to cover merely the general increase in operating and to carry through more effectively some of the work. This is an item where we can do \$10,000 worth if the committee wants to give us \$10,000 and we can use to good advantage \$150,000 if the committee wants to give us \$150,000.

SALARY OF MECHANIC.

Mr. BYRNES. I want to ask you one question about a specific item which you have in the note: You have transferred to the statutory roll one mechanic at \$2,280. What kind of a mechanic is he?

Dr. ALSBERG. In doing this work we have to construct special apparatus as new processes or new experiments come up, and you have to have special equipment and special apparatus, which have to be designed. This man constructs small pieces of machinery and some apparatus which are necessary and incidental to the work.

Mr. BYRNES. With the bonus that makes him receive \$2,480?

Dr. ALSBERG. Yes, sir. He is a skilled toolmaker. That kind of a man gets to-day in the industries never less than 90 cents an hour. If we were to go out and hire that kind of a man we could not get the labor at the minimum for less than 90 cents an hour. The manufacturers would hire them and pay more. On that basis it is not an excessive salary.

Mr. BYRNES. It occurs to me that that is a pretty good rate, 90 cents an hour. If you paid him only for the time that he was occupied at that rate he would still be getting less than the man at \$2,480?

Dr. ALSBERG. That is the minimum rate. This man is a skilled and trained toolmaker. We have not been able to get that kind of help for less.

Mr. BYRNES. You could go out and employ him by the hour and get him for a better rate. You evidently thought that it was less, but if you figure it out, you will find, as a matter of fact, that it is considerably more. At eight hours he would draw \$7.20 a day, and it is less than that.

Dr. ALSBERG. Seven and a half hours. Of course, 90 cents an hour is the minimum rate that you can get this kind of a man for. The question is whether you would be able to get this particular man at that rate.

Mr. ANDERSON. Would such a man require any experience or familiarity with the processes connected with the dye industry?

Dr. ALSBERG. Not in connection with the dye industry, but in connection with the construction and building of this kind of experimental equipment. You can not go out and pick up an ordinary mechanic and use him on this work, because if you did you would require two or three years to train him before he would be fit to do this kind of work.

Mr. BYRNES. If you can go out and get a competent man for \$1.25 an hour he would be cheaper than this man which you have. When you take into consideration the number of hours and his leave, you will find that you would save money if you could get such a man for \$1.25 an hour.

Dr. ALSBERG. That may be.

Mr. ANDERSON. I want to refer for a moment to the words "medicinal and technical" in the general language of the appropriation. It seems to me if those words were inserted that that would give this paragraph a very wide scope.

Dr. ALSBERG. It was not so intended.

Mr. ANDERSON. It would read: "For investigation and experiment in the utilization, for coloring, medicinal, and technical purposes, of raw materials." That covers everything under the sun?

Dr. ALSBERG. We are quite willing and perfectly ready to restrict that.

Mr. ANDERSON. To read: "For investigation and experiment of the utilization, for coloring, medicinal, and technical purposes which arise incidental to the operation of your plant?"

Dr. ALSBERG. Yes, sir; that is the thing.

INVESTIGATION INTO THE METHODS AND MANUFACTURE OF SIRUPS
AND SUGAR.

Mr. ANDERSON. Take up the next item.

Dr. ALSBERG. The next item is 66, in which we ask for a substantial increase for the investigation and development of methods for the manufacture of table sirup and sugar and methods for the manufacture of sweet sirups by the utilization of new agricultural resources. We ask for \$35,000, being an increase of \$20,000. With this increase it is proposed, as indicated in the language, to carry on work which is now very much called for and desired by the industry on the improvement of methods of producing sugar from beets and cane. We have been at work on the general question of the chemistry of sugar ever since there was a chemist in the original Commission of Agriculture. Some of the earliest work done by the chemist, way back in the seventies, was in connection with the establishment of the beet-sugar industry. The sugar industry, both beet and cane, is facing doubtful days in the immediate future, and the question of increasing and improving the efficiency of their production of sugar, the avoidance of the formation of molasses, the avoidance of the losses in clarification, is very much to the fore.

There is an instant demand on the part of the industry that the work along these lines be expanded. The bureau during the last four or five years has done some work, as indicated here, which has passed from the investigational to the demonstration stage in the manufacture from sugar cane grown in southern Georgia, northern Florida, and adjacent parts of Alabama, of a sirup so concentrated that it will not crystalize or ferment. That problem has been solved and in the last two years we have been out in the field demonstrating to people how the sirup is produced. Small quantities of it are now being produced and larger quantities will be produced in the years to come. The results have been published in a bulletin.

Mr. ANDERSON. How much longer do you expect to continue demonstration work on that?

Dr. ALSBERG. Probably a year or so on sirup ought to wind it up. It is proposed, if this increase is granted, to utilize the bulk of it for the expansion of the work on the study of the problems of sugar production from sugar cane and sugar beet on which we have been at work for years, but for which we have not had enough money to carry it on on a very considerable scale, and which have been carried on hitherto largely under this general fund for agricultural investigation, item No. 62. It is also proposed to expand the work on the production of a sirup from the sweet potato for which specific authorization was given last year. I can not report on this work at the present time because the appropriation made last year is now being worked with. The experts are now in the middle of the work and the results will not be clear until later in the spring.

SIRUP FROM SWEET POTATOES.

Mr. BYRNES. What are you doing?

Dr. ALSBERG. It was discovered in the bureau that if you take sweet potatoes and warm them up to a definite temperature, then the sweet potatoes will liquify themselves so that each sweet potato will be like a little bag filled with liquid. Then if you break the bags and strain off the skins and the undissolved material, you get a thick juice which is very sweet. The sweet potato naturally contains about 10 per cent of cane sugar and the bulk of the rest of it is starch. Under this treatment the starch is converted into malt sugar, the same sugar you get when you treat starch with barley malt. Thus you obtain a juice from the sweet potato which consists of a mixture of cane sugar and malt sugar. When you concentrate it you get a sirup which, if we can develop satisfactory methods for clarifying it and taking the dark color out of it, has tremendous commercial possibilities. Samples of it which we have made in a small way have been distributed among the trade and have been estimated as being very valuable. What we are doing at the present time down in Georgia is to try to develop this laboratory method of making a pleasing, cheap sirup from the sweet potato into a factory proposition. We are not building a factory, or anything of that kind, but we are going into a sweet-potato cannery down there which has plenty of sweet potatoes and the machinery. We are trying to develop the production of this sirup on a factory scale. We hope this year to be able to manufacture some barrels of it, see what the difficulties are, distribute those barrels to sirup mixers, let them use it, put it on the market, and see what the commercial possibilities are.

Mr. BYRNES. It seems to me the only question is the cost at which it will be possible to produce that sirup.

Dr. ALSBERG. Well, there is more than that involved. There is the question of getting the color out of it and improving the flavor, which we have solved in a laboratory way. The question now is, can we do it on a large scale? And then, of course, the fundamental question, as you say, is the cost of producing it; but in that section of the country sweet-potato culls can be bought very low—

Mr. BYRNES (interposing). There is no question about their being grown there because you can grow them world without end. You can grow enough sweet potatoes on an acre there to furnish almost enough sirup for a city, but I am wondering whether the process by which you will make it will be cheap enough to be practicable.

Dr. ALSBERG. Do you want to know the process?

Mr. BYRNES. No; it is not necessary to go into that; but is it an expensive process?

Dr. ALSBERG. No; because all you do is to put the sweet potatoes in a tank, fill the tank with water, have a steam coil in the tank, warm the water in the tank up to 100° centigrade, which is 212° Fahrenheit; leave the sweet potatoes there for a couple of hours. Then smash up your sweet potatoes, which are now easily broken, cool slightly by adding cold water, add a little malt, let stand for a short time, filter off the liquid, concentrate it part way, treat it with a clarifying agent, filter off the clarifying agent, and concentrate it to the desired density. This requires no equipment ex-

a filter, a tank, some heating coils, and an evaporator. It is a very cheap proposition if we can make a sirup on a large scale which is as acceptable to the public as the sirup we have made on a small scale. That is what we are now trying to find out.

r. ANDERSON. Is that the work for which you are asking the appropriation in this item?

EXTRACTION OF SUGAR FROM BEETS AND CANE.

r. ALSBERG. That is only a part of it. The remainder is the extraction of the work on the problems of the extraction of sugar from beets and cane. There are a lot of very serious problems that the sugar manufacturers and the cane-sugar manufacturers are confronted with. These problems have not worried them so much during the last two or three years, for obvious reasons, but at present they are very much worried about their very existence, and they are looking for help in eliminating wastes and leaks in their plants. These problems involve increasing the yields which are obtained in the commercial manufacture of sugar from beets and cane.

r. ANDERSON. The question that always arises in my mind is whether it should be possible for the Bureau of Chemistry, for instance, to advise the people who are doing these things every day and who doubtless have their own chemists at work on them and who have the processes before them all the time, and it would seem they naturally ought to have more information than you would have. I do not understand why there is anything you can do for those people or why you have more knowledge about it than they have.

r. ALSBERG. That, of course, would apply to any research in any industry, would it not?

r. ANDERSON. I think it does. It is a question that always arises in my mind with reference to this work.

r. ALSBERG. Undoubtedly, and it would apply to a lot of the work done by the Department of Agriculture, and it would also apply to a lot of work done in the Bureau of Mines, and to a lot of work done in the Bureau of Standards, and to a lot of work in the scientific bureaus of the Government generally.

r. ANDERSON. In my own mind I have assumed this justification for it; undoubtedly there are a lot of large concerns that have a force of chemists who are able to develop their processes, and when they develop them I assume they are to a certain extent, at least, secret processes; and if there is to be any competition in industry, and if a little fellow is to have something like an equal show with the big fellow, perhaps the Government is justified in doing this work in order that he may be able to do it. I do not know what the justification in your mind is, but that has been the idea running through my mind.

OPPOSITION OF INDUSTRIES TO GOVERNMENT RESEARCH.

r. ALSBERG. I think, Mr. Anderson, that is exactly the justification for the Government doing this work. I may say that in this work which we have just discussed, I have personally been attacked most bitterly because some of the work which was done has

been represented as being an interference with the industry. The attack on me was made by one of the representatives of one of the very largest concerns in the country. One of the chemists of one of the very largest concerns in the country said that he was opposed to the Government doing any research work at all in the chemical industry because his company was spending an enormous sum of money annually for research work, and anything the Government did became generally available and simply meant more competition for them. That is exactly the point that is here involved.

The beet industry and also the cane industry is a wideflung industry. There are a lot of companies in it with only one factory who can not afford to carry on research work. It is about all they can stagger under to employ a factory chemist to control their operations during the season. They can not carry on extensive investigations of a fundamental nature which have to be carried on over a period of years. They only have one chemist and he is rushing around all the time making the analyses which are necessary in the operation of the plant. Then there is the sugar planter situation.

There is a big movement on at the present time to cut out the refinery and to produce white sugar right on the plantation by the application of new principles of clarification and filtration. Of course, that, again, is a thing that should be investigated, but the sugar planter is not in a position, as a rule, to do it for himself. The big refineries and the big companies are to some extent. There is another reason, Mr. Anderson, and that is that a man who is in the Government service, who goes at these things from the outside and who has not grown up in the industry, has a new point of view. He is not so close to it that he can only see what has always been done, and we find very frequently that a Government man with wide experience in other directions goes into an industry and sees it from an entirely new point of view.

ENFORCEMENT OF FOOD AND DRUGS ACT.

Mr. ANDERSON. Take up the next item.

Dr. ALSBERG. The next item is the general item which covers the lump-sum fund for the enforcement of the food and drugs act. It is recommended that an actual increase of \$100,000 be provided. The apparent increase here in the sum estimated of \$763,401 is more than the additional \$100,000, due to the fact that there is included the salaries of the inspectors that it is recommended be transferred to the lump sum, aggregating \$93,480. That is explained in the note. The reason for asking the increase is the reason which was advanced last year when the item was cut by \$30,000, so that we have for this current year \$30,000 actually less than last year. It is that the cost of operating generally has gone up.

Our inspectors have to travel, and it used to cost us about \$1,500 a year to carry an inspector over and above his salary, that amount covering his cost of travel, the collection of samples, and so forth. To-day, with the cost of travel increased, the inspectors can no longer be carried on \$1,500. The present cost of carrying an inspector is probably well in excess of \$2,000. Every item in connection with the enforcement of the law has increased. We have to pay more salary to our chemists on the lump-sum fund in order to keep a force.

INCREASE IN FORCE.

Mr. BYRNES. The itemized statement you have would indicate that the increase is due to the increase in the number of employees from 243 to 312, with an increased appropriation of \$115,000. The increase for the traveling expenses amounts to but \$30,000.

Dr. ALSBERG. Yes.

Mr. BYRNES. What is the necessity for the increased number of employees from 243 to 312?

Dr. ALSBERG. We are short. We have at the present time approximately 75 vacancies in chemists, bacteriologists, microscopists, laboratory aids, the people who make the analyses and do the laboratory work that is necessary.

Mr. ANDERSON. Have you 75 vacancies under this item alone?

Dr. ALSBERG. No. That includes all vacancies within the bureau as a whole.

TRANSFER OF EMPLOYEES FROM STATUTORY TO LUMP-SUM ROLL.

Mr. ANDERSON. How many men are you transferring from the statutory roll?

Dr. ALSBERG. Fifty-one inspectors.

Mr. ANDERSON. How many vacancies are there on this roll, can you say offhand?

Dr. ALSBERG. I can not tell you exactly how many vacancies there are.

Mr. ANDERSON. How many new men are you asking for under this new item?

Dr. ALSBERG. I can not make a definite promise because so much will depend on conditions, but about 18 or 20 men is what we are proposing to put on, but with these 18 or 20 men, who will be technical employees, we will not have as many technical men as we have had in previous years.

Mr. BYRNES. This Book of Estimates shows that for the year 1920 you had 330, that for this year, 1921, you have 243, and that you now propose to increase not by 18, but to increase from 243 to 312.

Dr. ALSBERG. That number includes 51 inspectors transferred from the statutory roll to the lump sum.

Mr. BYRNES. That would make a total of 294.

Dr. ALSBERG. Yes; and adding 18, which is the number we figure on adding, would give the total of 312, but you will understand there has been a time when we had more men on this particular roll than that.

Mr. ANDERSON. In 1917 you had 206 apparently in chemists alone, and I think under your estimate for 1922 you have 160 chemists.

Dr. ALSBERG. I have not those figures here, but I do not doubt but that you are right on that.

Mr. ANDERSON. Of course I am simply taking the figures that appear in the Book of Estimates.

Dr. ALSBERG. At any rate there would be put on about 18 additional chemists. In 1920 we had 330, and in 1922 we expect to have 312 altogether, which includes the 54 inspectors, so that there will be a substantial reduction in the total number carried on

the fund for enforcing the food and drugs act. We have had to make that reduction in this way: We have not dismissed anybody except for some misdemeanor or inefficiency, but we have not this year filled any vacancies that arose by resignation when it was in any way possible to avoid it. I would have to verify this, but I do not believe we have filled a dozen vacancies in technical positions since the 1st of July, and perhaps not half a dozen. If a man resigns, if it is possible to get along without him we have done without him. We have had to do that for a number of reasons. In the first place we had less money; in the second place everything cost more to operate; and in the third place we have not been able to get new men who are competent for the salaries we wanted to pay, so our force has shrunk considerably in recent months.

Mr. ANDERSON. What you have actually done for the most part is this, as I gathered it from the figures, where vacancies have occurred, particularly in the lower-grade employees, you have not reappointed persons and you have taken that money and used it for the purpose of increasing the salaries of men already on the roll, or for the purpose of hiring men at higher salaries than were represented by the grades in which you had vacancies.

Dr. ALSBERG. That is true, sir; and, of course, some of it has been used for operating expenses. But your statement is quite in accordance with the facts. We have deemed that that was necessary or we could not have held together any force at all.

PROMOTIONS.

Mr. ANDERSON. Are there any increases in salaries contemplated under this increase that is requested?

Dr. ALSBERG. You mean increase in salary of chemists on this roll?

Mr. ANDERSON. Yes.

Dr. ALSBERG. There are no specific increases contemplated. We contemplate merely, as we have in the past, increasing salaries periodically in the line of promotion in the usual way. You know, Mr. Chairman, of course, that twice a year recommendations are made to the Secretary for small increases in salaries of individual employees.

Mr. ANDERSON. You do not contemplate any general automatic promotion of everybody up and down the line?

Dr. ALSBERG. No; what we contemplate is giving the deserving men the promotions they would have if everything was normal, in the usual way.

Mr. ANDERSON. I do not know what the attitude of the committee will be, but personally I do not see how the committee can allow any general increases in salary. It may be possible to permit of recognizing special service or ability, but I do not think the committee will contemplate any automatic increase or general increase in salaries.

Dr. ALSBERG. That, of course, is not contemplated here. There are a certain number of men in the bureau who would, under ordinary conditions, have received promotions. I take it it is not your thought that nobody should be promoted in the service who happens to be deserving.

Mr. ANDERSON. I take it that in a service of this kind, where probably no two men are of exactly the same value to the organiza-

tion, some discretion has to be used and ought to be used in making promotions. I take it if a man develops and is capable of carrying on a more important line of work or the character of his work changes to work of a more important character, he is entitled to more salary.

Dr. ALSBERG. Nothing here is contemplated which is different from what has been the practice of the department for many years. If a man resigns a younger man is put in his place. He is given a promotion, but not usually to the salary of the man who resigned. If the man who resigned was getting \$3,500, the man who is put in his place, for instance, might be getting \$2,500. The Secretary will put him up to \$2,760, and if he makes good he will go up another notch, and so on. No general increase here is contemplated or any change in the policies of the department. It is merely contemplated that the usual custom of recognizing worth and service shall continue; that is all.

Mr. ANDERSON. You say that is the policy of the department, but there are two lines of policy that have been followed by the department so far as indicated, at least by the figures, one is the policy you have indicated of promoting men who have shown special efficiency or who have undertaken more important work, and the other is a system of automatic promotion under which everybody is shoved up a grade without any particular reference to increased efficiency or anything else. It is a pure, automatic promotion proposition.

Dr. ALSBERG. Mr. Anderson, that has never been done in the Bureau of Chemistry. The only difference between the handling of promotions in the Bureau of Chemistry in the last year or two and in previous times is that owing to the large number of resignations and the difficulty of obtaining men at the salaries that we can pay promotions of the competent people have been made at somewhat more frequent intervals than they were in the past, but there has never been any wholesale promotion or general readjustment and none is contemplated. There is no change in policy contemplated whatever; the only promotions will be of those who, in the judgment of responsible officials, are particularly competent and particularly worthy of receiving recognition.

ENFORCEMENT OF LAWS RELATING TO THE IMPORTATION OF IMPURE TEAS.

Mr. ANDERSON. Take up the next item.

Dr. ALSBERG. The next item is No. 68, page 154. This is the tea-inspection law.

Mr. ANDERSON. That is permanent law and the item is eliminated for that reason.

Dr. ALSBERG. Only this is to be said, that the next item merely carries the appropriation for the enforcement of the tea act.

Mr. ANDERSON. There is no change in that item?

Dr. ALSBERG. There is no change. I may say in this connection that the transfer of the tea act to the Bureau of Chemistry, I think, has made for a certain amount of efficiency. Not that the act is being enforced more efficiently to-day than it was, because I think the enforcement is the same, but the importation of tea is, to a certain extent, a seasonal proposition—that is, more tea comes in at one

time of the year than at another—so that we have been able for a few months in the year when the work on the tea act is slack to employ the men who are engaged on that particular work in connection with the enforcement of the food and drugs act. I think there has been that little bit of increased efficiency as a result of the transfer.

INVESTIGATION OF NAVAL STORES.

IMPROVEMENT OF TURPENTINE PRODUCTION.

The next is item 70, on page 155. That is the item for the naval stores investigations. Under that item the bureau is at work with the naval stores industry to promote the welfare of that industry by developing better methods of producing turpentine, handling turpentine, transporting it, grading it, and using it. There have been several publications in that connection. Here is a bulletin which was published in 1911; that is an old one which may interest you; and here is a bulletin which was published during the year on resin and turpentine. This bulletin gives simple information that has proven of very great value to the naval stores industry and represents one of the lines of work under this item.

Another line of work is the matter of grading resin and turpentine. Before the Bureau of Chemistry took hold of this work there was much confusion concerning the grades and standards of resin and turpentine; the grades were different in every market, and it was the frequent practice for resin and turpentine to be graded down to the producer and up to the purchaser. The bureau has established permanent and definite grades for resin and for turpentine, and much fraud and confusion has been avoided through that work. The bureau has deposited in the principal markets type samples which the bureau checks up. They are used and form the basis of commercial transactions. The bureau is frequently asked to act as a referee in disputes on resin and turpentine. In other words, the work here is work rather similar to the work that is done on grain grades and under the grain-grading act, except that there is no law covering this thing, and similar to the work that is done in the Bureau of Plant Industry with reference to the production of grains.

INVESTIGATION OF MANUFACTURE OF INSECTICIDES AND FUNGICIDES.

The next item is 71 on page 156, "For the investigation and development of methods of manufacturing insecticides and fungicides, and for investigating chemical problems relating to the composition, action, and application of insecticides and fungicides." No change is asked. This work is research work done in cooperation with the Bureau of Entomology, the Bureau of Plant Industry, and the Bureau of Chemistry to develop improved insecticides and fungicides and improved methods of manufacture. Under this particular item work was done on calcium arsenate. Calcium arsenate, as you know, is now apparently proving of the greatest value in combating the boll weevil.

I do not mean to imply that the Bureau of Chemistry had anything to do with the discovery of calcium arsenate as an insecticide

r the boll weevil; that was not our job; that was the job of the bureau of Entomology, but when it became apparent that calcium arsenate was going to be important it became our job to develop proper methods of manufacture. So we investigated how calcium arsenate could be best and most cheaply manufactured. We applied for a large number of public service patents on the manufacture of and we were granted three. The reason we applied for so many patents was that we wanted to avoid the situation which now exists with reference to lead arsenate. When lead arsenate was recommended as an insecticide an industrial chemist was clever enough to set down and figure out several ways of making lead arsenate; there is not any particular trick about making lead arsenate, but he applied for patents on it and he has been taking toll on the production of lead arsenate ever since. When the department discovered that calcium arsenate was going to be an important insecticide the method of manufacturing it was a minor matter, but we felt we should endeavor to avoid the same situation as has existed with reference to lead arsenate. So we investigated all possible methods of making calcium arsenate and applied for patents on every method we could conceive of; the Patent Office threw out all but three, but in throwing out all the others they made it impossible for anybody else to patent them. Our only object was to throw every process open that we could, and calcium arsenate is now being manufactured by one of the bureau's methods.

Another thing we have done in this connection is illustrative of the kind of work that is going on. Nicotine, as you know, is widely used as an insecticide, but it is very expensive and the supply is short. The question, then, is to find out what there is in the structure of the molecule of nicotine which makes it peculiarly suitable as an insecticide. To do that our chemists, working on this question, have made artificially, in cooperation with the color chemists, a large series of compounds which are chemically related to nicotine, made them artificially in order to determine what was the peculiarity which gave nicotine its properties. In the course of that investigation they discovered that all substances which were derived from the chemical substance which is related to nicotine—and that substance is called pyridine—had the same action as nicotine. Now, piperydine is a thing that it is very easy to make artificially and make cheaply, and pyridine is about one-tenth as poisonous to insects as nicotine. We are now at work making new substances from piperydine in an effort to get a substance that will be as poisonous as nicotine and which can be made by the ton artificially and cheaply, so that we will not be dependent wholly upon tobacco. There is every prospect that it will be possible to do that. That is one of the types of investigation that is going on under this appropriation.

PERATIVE STUDY OF METHODS OF DEHYDRATION OF MATERIALS USED FOR FOOD.

The next item is No. 72, page 156, "For the study and improvement of methods of dehydrating materials used for food, in cooperation with such persons, associations, or corporations as may be found necessary, and to disseminate information as to the value and suita-

bility of such products for food." An increase from \$23,500 to \$100,000 is asked. This appropriation was first made in 1919, if I recollect correctly, or about that time, and was not originally estimated for by the department, but was asked for by the industry itself. An allotment was made originally in connection with the war emergency.

Mr. ANDERSON. Was that item originally carried in the stimulation bill?

Dr. ALSBERG. There was no specific appropriation for dehydration work in the stimulating agriculture act, but under a general appropriation for food conservation carried in that bill a small allotment was made by the Secretary of Agriculture for dehydration investigations.

CONSERVATION OF FOODSTUFFS.

The only point I wanted to make was that originally the appropriation was made at the instance of people who are interested in the movement to conserve food. With that appropriation the department has cooperated with the industry. During the war the dehydrating industry grew up. This industry grew up in order to supply dehydrated vegetables to the War Department, and those vegetables were largely potatoes and products of similar kinds. The material that was supplied and first made by the industry was not very satisfactory. By that I do not mean that it was in the least unnutritious or unwholesome; it was perfectly nutritious and perfectly wholesome and perfectly satisfactory from that standpoint, but its flavor was not good, its texture and taste were not good, and its appearance was not good, so that it did not constitute an ordinary merchantable article. The object of this appropriation was to assist the industry in improving its methods of manufacture so that they would produce a merchantable and satisfactory article, and at the same time to get the Government's influence behind the industry to the extent of assisting in creating a market for the products by having the Government educate the people in the value of these products in the usual way through circulars, bulletins, demonstrations, and similar announcements.

The work that the bureau has done in that connection, I think, has been of very great value to the industry. The quality of the products which the industry is now producing is vastly improved over the quality of the products they made during the war. Of course, it would not be fair for me to say that the Bureau of Chemistry was entirely responsible for that, but the Bureau of Chemistry had its share, and a considerable share, although the industry, of course, is working on the proposition. Here are some samples of ordinary dried apples made by sulphuring, and here are commercially dehydrated apples of the present time [indicating]. Apple pie made from that product is, in my judgment, indistinguishable from apple pie made from fresh apples. They were not able to produce that kind of product three or four years ago. Here are California pears sulphured and dried, and here is the dehydrated product [indicating]. That is not a laboratory sample, but is a commercial sample; that is on the market at the present time. Here are carrots and here

is cabbage. It is possible to dehydrate string beans, which, when cooked and on the table, are indistinguishable from the fresh beans.

Mr. ANDERSON. How long have these dehydrated products been dehydrated? How long have they been in this condition?

Dr. ALSBERG. I could not tell you about these particular samples. It was supposed that all you had to do was to get the water out of the vegetables and then stack them in a bin and they would keep indefinitely. We now know that is not true; the material will not keep indefinitely if it is freely exposed to the air. It will keep when properly prepared and properly stored for six or eight months, but it will not keep for five or six years. You can not put it in a paper bag and put it on the shelf and expect it to keep indefinitely that way. It should be stored, after it has been dried very much drier than ordinary dried fruit, and it should be stored in a reasonably tight container out of contact with the air.

PACKING OF DEHYDRATED FOODSTUFFS.

Mr. BYRNES. As a commercial proposition, how do you propose to handle it? How would it be handled—by putting it in cans, boxes, or what?

Dr. ALSBERG. That depends upon the particular product. Your dehydrated fruits, where you have a lot of sugar and acid in them, keep better than products like turnips and cabbage, which are not sweet and have no acid in them. They can be handled perfectly well in ordinary sealed cartons; that is, in a package such as is used for any of these breakfast-food products.

Mr. BYRNES. How long will they keep in such a container?

Dr. ALSBERG. They will keep a year in that kind of a container. These other products, however, which are not sweet and have no acid, like potatoes, carrots, turnips, cabbage, and beans, are not so easy to handle, if you wish to keep them for very long periods; they must be put into an air-tight container, like a tin container, not necessarily sealed up like canned goods, but at least with a tight friction top cover. You may say, then, what is the advantage over canning? The advantage over canning, in the first place, is that when you dry these vegetables from 5 to 10 pounds are reduced to 1 pound and you can get into a tin container of the same size 5 or 10 times as much as you could of the fresh article, depending upon the particular product, and you can get in such a container an amount which will soak up to 5 or 10 times as much as you can get through the use of the ordinary method of canning. Moreover, for shorter periods of storage, tin is not necessary.

Mr. BYRNES. Is that true of the sweet potato?

Dr. ALSBERG. That is not true of the sweet potato to the same extent, nor of the potato; their ratio is about 5 to 1.

Mr. ANDERSON. When water is put on these dehydrated vegetables again, do they assume their normal size?

Dr. ALSBERG. They swell up to the normal size and they are pretty nearly indistinguishable from fresh vegetables and fruits, and in a great many cases are a great deal better than canned goods.

Mr. BYRNES. So far as your investigations go, from the commercial standpoint, the sweet potato, for instance, would have to be placed in an air-tight container?

Dr. ALSBERG. If you wanted to keep it for a long time, yes.

Mr. BYRNES. When you put on the market, unless the merchant and consumer knew the date that it was taken out of your plant, it would be a very dangerous thing to buy, would it not?

Dr. ALSBERG. No; the thing would not be dangerous, but it would be off flavor. When I say they do not keep, I do not mean they decay or decompose, because they do not do that.

Mr. BYRNES. But they lose their natural flavor?

Dr. ALSBERG. Yes; and the matter regulates itself automatically. because women would not buy them any more than they would buy anything off flavor; they lose their characteristic flavor and their color. That is one difficulty at the present time. It was formerly thought that you could take any fruit or any vegetable, put it through the dehydrating process, and you would get satisfactory products, but now, apparently, each vegetable has to be treated, to get the best product, in its own peculiar way. Some products have to be dehydrated raw; other products have to be blanched, which is what the canner calls parboiling; they have to be blanched for different periods, and they have to be handled in a definite way: some will have to be thoroughly cooked before they are dried, while others must merely be given a hot dip; some will have to be cut up and shredded while others are better dried in larger pieces; some should be dried down to a moisture content of 2 or 3 per cent, while others should be dried down to a moisture content of 15 per cent; some will have to be treated in one way and some will have to be treated in another way. In the individual vegetables some varieties give you better products than others. Take beans. There are certain types of string beans which give you a very unsatisfactory product when they are dried: somehow or other you do not keep the flavor; other types of beans give you an excellent product. This is nothing more than the canners have learned.

They all recognize that there are peaches which are good for canning and peaches that are not good for canning. Now, that involves a large amount of experimentation which, in the canned goods industry, was done painfully and wearily and with great trouble over a long period of years, holding the development of the industry back. We have been endeavoring, so far as our funds permitted, to carry out that work and get it all over with, and help the industry during its growing pains so as to put it on its feet. It is that type of work which we wish to do more extensively than we have done in the past. What we also wish to do more extensively than in the past and than we have had funds for, is educational work. When the first dried fruits and vegetables were put out, away back in the Civil War days, they were pretty poor stuff; they were even poorer than the material that was made in the emergency for the Army, so that the public has acquired a prejudice against these materials. We want to assist the industry by educating the public as to the value and worth of these products.

Mr. ANDERSON. How are you going to do that?

Dr. ALSBERG. By publication, by journal articles, and by propaganda of that kind.

FIRMS MARKETING DEHYDRATED FOODSTUFFS.

Mr. ANDERSON. I do not see how you are going to get anywhere with these dehydrated foods unless somebody gets them out on a commercial basis.

Dr. ALSBERG. They are being manufactured at the present time by about 40 concerns. There is the Wittenberg-King Co., at The Dalles, Oreg.; I may not mention them all, but will mention all I can remember; there is a concern at Atascadero, Calif., the exact firm name of which I do not recall; there is the Kelly-Clark Co., at Morristown, Tenn.; there is a man by the name of Farnum, at Milwaukee; there is the Anhydrous Products Co., in North Chicago; and there is the Clements Horst Co., in San Francisco.

(A list of all the firms we know of follows:)

AMERICAN MANUFACTURERS OF DEHYDRATED FRUITS AND VEGETABLES.

American Food Products Co., Chicago, Ill.
 Anhydrous Products Co., Chicago, Ill.
 Alberti Bros., Los Angeles, Calif.
 Beales-Kimball Fruit Co., Van Nuys, Calif.
 Caladero Products Co., Atascadero, Calif.
 California Evaporated Products Co., Los Angeles, Calif.
 California Associated Raisin Manufacturers, Fresno, Calif.
 Chicago Dehydrated Products Co., Chicago, Ill.
 Davis Farm Dryer, Davis, Calif.
 Dayton Evaporating & Packing Co., Dayton, Oreg.
 Drying Systems (Inc.), Chicago, Ill.
 E. Clements Horst Co., San Francisco, Calif.
 Fresno Dehydration Co., Fresno, Calif.
 Holland-American Syndicate, San Jose, Calif.
 Idaho Products Co., Boise, Idaho.
 Idaho Packing Corporation, Buhl, Idaho.
 Joannes Dehydrated Products Co., Buena Park, Calif.
 King's Food Products Co., Portland, Oreg.
 Natural Food Operating Co., Fort Collins, Colo.
 National Food Preserving Co., Neillsville, Wis.
 Neel-Evans Dehydrated Georgia Yams, Thomasville, Ga.
 North Ontario Packing Co., Los Angeles, Calif.
 Nohan Soup Co., Rahway, N. J.
 Salem King's Food Products Co., Salem, Oreg.
 Schoreman Laboratory, Chicago, Ill.
 Southland Products Co., Humboldt, Tenn.
 Spawns Dehydrated Products Co., Seattle, Wash.
 The Dalles King's Food Products Co., The Dalles, Oreg.
 Twin Falls Dehydrating Co., Twin Falls, Idaho.
 United States Dehydration Co., Denver, Colo.
 Washington Dehydrated Food Co., North Yakima, Wis.
 Wisconsin Dehydrating Co., Milwaukee, Wis.

And others in the raisin industry of California and the prune industry of Oregon and Washington.

Falk-American Potato Flour Corporation, Pittsburg, Pa., with plants at Cadillac, Mich.; Bemidji, Minn.; Grand Rapids, Wis.; Idaho Falls, Idaho; and Monte Vista, Colo.

R. L. Pitcher Co., Potato Flour Mill, Caribou, Me.
 Wyoming Dehydration Co., Cowley, Wyo.

SPECIALIZING IN DEHYDRATED SWEET CORN.

Martin Cope's Sons, Manheim, Pa.
 Amos H. Cope, East Petersburg, Pa.
 J. H. Kreider, Lancaster, Pa.

Frank Hostetter, Lancaster, Pa.
A. R. Hostetter Co., Dayton, Ohio.
E. B. Hostetter Co., Richmond, Ohio.
John K. Ryder, Lancaster County, Pa.
W. H. Geist, Eckart Station, Pa.
Martin Cope's Sons, Rheems, Pa.

They are now putting these products on the market. Our men have been in their plants helping them to improve their processes, overcome their difficulties, and, so far as we were able, help them to market the products. At present certain quantities are being marketed, but the marketing has been largely through hotels and restaurants and institutions. An example of the sort of thing we would hope to do is what we have done with hospitals. We secured a certain amount of this material prepared commercially, bought it and distributed small samples of a series of products—being careful to include some from each manufacturer so that we could not be accused of playing favorites—to a large number of the principal hospitals of the United States and asked them to try them. They were small samples, so that there was no question of giving away anything of appreciable value. We asked them to try them out and report to us. They have reported to us, and we are going to publish those reports in the hospital journals. At the same time we have furnished these hospitals with a list of the manufacturers, playing no favorites, but giving them the whole list. Now, the manufacturers are telling us that they are finding a sale among the hospitals of the country for these materials, which they could not have opened up for themselves. These people are willing to try something which the Government sends them; anything that anybody else sends them goes into the trash basket. They tried it and they were convinced the material was good, and some of them came back to us and wanted a list of the houses which were manufacturing. Now, that is the type of thing we have been trying to do in creating a market.

Mr. ANDERSON. Do you need an increase of \$76,500 to do this?

Dr. ALSBERG. Well, Mr. Anderson, you know how that is. As I have told you before, we can do \$10,000 or \$100,000 worth of work.

EQUIPMENT AND MATERIAL.

Mr. ANDERSON. For instance, you ask an increase of \$36,600 for equipment and material. What does that represent?

Dr. ALSBERG. What we want to do there is, in part, to purchase a certain amount of this material so that we may help to create a market for the product along the lines that I have just indicated as having been done in a small way with the hospitals. The greater part of this \$39,600 is intended for the purpose of purchasing dehydrated material and making a distribution of it, in small lots, to people that we want to make acquainted with it. Frankly stated, this was intended as a sort of campaign to educate the people in the use of these products.

Mr. ANDERSON. It strikes me that the Government is getting pretty close to the limit when it undertakes to put on an advertising campaign even for a new industry, and when it undertakes, on top of that, to buy samples, I am not so sure it is not exceeding the speed limit a little.

Dr. ALSBERG. I am telling you what we have in our minds. If I think that we should not do that, why, we will abide by your instructions in that particular.

Mr. ANDERSON. I am interested in this proposition and I think committee will be—I think it has some possibilities, but we necessarily have to keep in mind some distinction as to what is properly governmental function and what is not.

Dr. ALSBERG. Certainly.

COST OF DEHYDRATED PRODUCT AS COMPARED WITH CANNED.

Mr. ANDERSON. I want to ask this question in connection with a particular item: What is the relative cost of handling vegetables in this manner and canning them as in the usual practice?

Dr. ALSBERG. The cost of handling by the dehydration process varies, of course, with the kind of material, but it is lower than the cost of canning an equivalent amount. Some kinds of vegetables have to be given more preliminary treatment and there is more cost in others.

Mr. ANDERSON. What I am trying to get at is this: It seems to me if this industry is going to succeed it has to succeed in competition with fairly active competition.

Dr. ALSBERG. Yes, sir.

Mr. ANDERSON. And we do not want to go to work and spend a lot of money in the aid of this industry if it can not succeed commercially. We are not going to do the industry or the people any good if we do that.

Dr. ALSBERG. I can give you those figures. I do not carry them in my head, but I can give you a statement of that, if you desire it.

Mr. ANDERSON. Very well.

Dr. ALSBERG. One of the things that this industry is going to do, in my judgment, is to drive out completely the sun drying of food and vegetables. The dehydrated product is better in quality and there is no danger of a loss of the crop from rainy weather.

COST OF DEHYDRATED CORN.

During the last season our specialist kept accurate cost records of certain corn dehydration plants. The average total cost of dehydrated corn per pound was \$0.13325. A pound of dehydrated corn is equivalent to three cans of canned corn. The cost of producing dehydrated corn in the quantity equivalent to one can of canned corn is a little over four cents.

Dr. ALSBERG. Mr. Chairman, may I revert for a moment to the question for carrying into effect the food and drugs act?

Mr. ANDERSON. Certainly.

Dr. ALSBERG. In thinking over my statement I am afraid I may have left the impression with the committee by my statement in the record that the increase was to be used in very large measure for increasing salaries. That is not the case. There will be no more than the customary promotions. The increase will be used in the main for increased operating expenses and an increase in employees. We are short-handed and in pretty bad shape with reference to the enforcement of the food and drugs act.

NUMBER OF VACANCIES.

Mr. ANDERSON. I understood that you had quite a number of vacancies on this roll?

Dr. ALSBERG. Yes, sir.

Mr. ANDERSON. When you fill up those vacancies will you still need more men?

Dr. ALSBERG. The volume of work that has to be done in connection with the enforcement of the food and drugs act is in part beyond our control. There is a certain part of that work which involves importations, because we have to inspect imported food and drugs, and the volume of that work is entirely beyond our control. We are not able to do the work as it ought to be done, and it is being handled with an inadequate force. The importers are complaining—and with justice—on two counts: One is that we are not handling the work as promptly as we ought to do and the other is that importations which are in violation of the law are slipping by us from time to time, which is also true, because we have not a sufficient staff to handle all of them. I have outlined the situation in my annual report, of which I have a copy here.

You asked, Mr. Chairman, whether we will not have enough men with those vacancies filled. Those vacancies are not statutory vacancies, and, as you yourself stated quite correctly, what we have done with the funds as they became available when men resigned has been to use them for the increased operating expenses and also to increase the salaries of those employees whom it was necessary to retain, but who could not be retained otherwise. Therefore, while we have vacancies we can not appoint additional men to fill them, because the cost of hiring men is greater than it was. We can not appoint additional men without additional funds. In New York we used to have about 25 or 30 men at the laboratory doing import work, but we have now only about 18 or 20. In consequence the work, of course, has suffered.

STATUS OF APPROPRIATION.

Mr. ANDERSON. Are you spending your total appropriation this year?

Dr. ALSBERG. Yes, sir; we are spending the total appropriation for the enforcement of the food and drugs act this year, and we need every cent that accrues from these vacancies. That is one of the reasons why we are allowing the vacancies to remain unfilled. We have absolute need for funds in order to break even, because we have increased operating expenses, and we have to increase salaries now and then in order to keep our men. Every time we lose a man who is getting \$1,800 or \$2,000 we can not replace him with a new man except at a higher salary. Therefore only a small portion of this money will go into anything but the usual promotions.

I have the situation outlined in my annual report. I think the first page of it will give you the situation. We have actually on the record done more work in the enforcement of the food and drugs act. When I say "on the record" I mean that we have made larger progress this year than before; that is, we had made larger progress

up to July 1 than in any former year. The reason for that, however, was that we have made more seizure cases than criminal cases. It is relatively easier to make seizure cases, much easier than to make a criminal case. It does not require nearly so much work.

Before we take up the item relating to wool-scouring waste may I add to my statement concerning dehydration?

Mr. ANDERSON. Certainly.

Mr. ALSBERG. You will remember that one year the appropriation for that purpose was \$250,000. During that year we expended of the appropriation only \$96,823. The remainder of the appropriation reverted to the Treasury.

UTILIZING WOOL-SCOURING WASTE.

Mr. ANDERSON. The next item is for the investigation and development of methods of utilizing wool-scouring waste, for which \$9,000 is asked.

Dr. ALSBERG. The investigation of wool-scouring waste, you will recall, arose in connection with the development of methods for the utilization of the scourings from wool.

PREPARATION OF LANOLIN.

Mr. ANDERSON. And to the recovery of grease?

Dr. ALSBERG. It involved the recovery of the grease and the recovery of the potash in the wool. Some samples of wool will scour with anywhere from 25 to 50 per cent of loss. That loss, of course, is in part dirt and trash, but there are samples of wool that will yield as much as 25 or 30 per cent of wool grease. Such grease is used, when properly recovered and refined, very largely in the pharmaceutical industry. It is known as lanolin. Before the war it was entirely imported from abroad, but during the war some of it was produced in the United States, and it is now being produced to some extent in the United States.

The Bureau of Chemistry is cooperating with the concerns that are now producing lanolin in order to devise ways and means for improving its extraction and for the recovery of a larger proportion of this waste product. The results, of course, should be of benefit to the woolgrowers generally, because there are perfectly enormous quantities of grease going to waste every year. Here [indicating] is a sample of some of the material. This [indicating] is crude, raw wool grease, and this [indicating] is a sample of lanolin made from it by one of the processes developed by the bureau.

Mr. ANDERSON. This is not as white as some.

Dr. ALSBERG. No, sir; it is not as white as some.

When water is mixed with it it turns whiter. At the present time it is estimated that there are 75,000,000 pounds of this grease that is wasted, and also 18,000,000 pounds of potash. The mess or waste is in part grease, in part nitrogenous material, and in part mineral salts, of which potash salts are the most important. Good progress has been made in the methods of preparing lanolin. We have been able to assist the industry, and we hope to go further with it. However, we have had difficulty because of losing men con-

nected with the work. It should be possible to utilize a large part of wool grease now wasted. We had hoped to be able to report that the work was finished this year. However, I am not able to do so. It will probably take one or two years more. Here [indicating] is some potassium sulphate which was obtained from this wool grease. That is a direct utilization of wool waste. One method of utilizing this is to mix it with fertilizer, and this [indicating] is some fertilizer made by mixing wool waste with acid phosphate and bone meal, the wool waste supplying the potash and nitrogen.

Mr. BYRNES. At what cost can it be produced so as to make it possible to use it economically for fertilizer purposes?

Dr. ALSBERG. We can not state definitely yet, but the indications are that it can be done economically. That is the largest of our problems—that is, what we can produce that material for. That is the problem that we are trying to solve. At present the indications are that it can be done around \$30 a ton, but we have got to get it cheaper than that. That is too high.

Mr. ANDERSON. When you say "that material" what do you refer to?

Dr. ALSBERG. I mean that material in the big bottle [indicating].

Mr. VEITCH. That is the concentrated part of the material after most of the grease is removed.

Dr. ALSBERG. I do not mean by exhibiting this to assert that it can be used economically as fertilizer material. We know how to be of assistance to the lanolin industry, and we think it is possible to make potash economically. The potash made from wool grease will probably not go into fertilizer, because it will be in the form of carbonate. Carbonate is more valuable for chemical uses. Its effect upon the fertilizer industry will be that by using this potash in the chemical industry it will liberate potash from other sources to be used in fertilizer.

Mr. BYRNES. To what extent is private enterprise going into the production of lanolin?

Dr. ALSBERG. As I understand it, there are only two concerns at the present time that are producing any lanolin at all from wool grease. There was none when this work started. By that I do not mean to imply that we were responsible for getting this particular concern into the business. The war was responsible for that. The Medical Corps of the Army needed lanolin for medical purposes. None was being imported then, and it was taken up by the Medical Corps of the Army with one big wool-scouring concern. They went into the thing, and we have cooperated with them.

Mr. BYRNES. Where is it imported from?

Dr. ALSBERG. It used to be imported from Germany. Lanolin was discovered and the name trade-marked and patented by a German chemist by the name of Oscar Liebreich. He is also the man who discovered chloral hydrate. Before the war practically the whole lanolin-producing industry was concentrated in Germany and none of it was produced in the United States, and, so far as I know, very little of it was produced anywhere else. The war forced us into it. Although the bureau undertook this work before we got into the war, no manufacturing of it was done. We had hoped to have this project closed up this year, but I regret to say that we can

not regard it as closed up. We lost our men on this work three times, or we had a 300 per cent turnover in our chemists employed on this project. That, of course, has greatly delayed it.

Mr. BYRNES. If you demonstrate that you can produce this lanolin, why is it that no private enterprise will do it?

Dr. ALSBERG. We have not quite finished our work on that score. We have still some work to do before finishing it up. We expect that that will be done in the course of a year or two. We have not as yet published the facts or the methods. When the methods are published I expect that private enterprise will go into it. I would like to add one other thing, and that is that for the past two years because this appropriation was first made in 1919, was it not?

LANOLIN ALLOTMENT.

Mr. ANDERSON. In 1920, according to the indication here.

Dr. ALSBERG. There was a little allotment made to this lanolin problem, because it was an urgent war problem. The medical people needed it, and there was an allotment made from the stimulating appropriation; so we now have had an allotment for this purpose for three years, and this represents the fourth year. I merely want to add that in two of these years we did not spend but a portion of the money. That was not because we did not want to spend it, but because we could not get the chemists or keep chemists on the work. Therefore, there has actually been less money expended on it than would appear from the record.

PRODUCTION OF LEATHER FROM AGRICULTURAL RAW MATERIAL.

Mr. ANDERSON. The next item is No. 74, "For investigating the utilization of agricultural raw materials in the production of leather and tanning and leather-making materials, and for developing and demonstrating improved methods or processes for producing leather, \$15,000."

Dr. ALSBERG. This is a new item, although it does not represent new work. The Bureau of Chemistry for many years, in cooperation with the Bureau of Animal Industry and the Bureau of Plant Industry, has done the chemical side of the department's work on the production and marketing of hides and the manufacture and marketing of leather. The whole leather industry is, of course, an agricultural industry. The hides are agricultural products, and the tanning material is either an agricultural product, strictly speaking, or else a forestry product, so that the whole question of producing leather is an agricultural question. Now, in its past work, the department has published a number of bulletins on this general subject. Here [indicating] are some purely scientific papers. They deal, for instance, with the properties of various hides and of hides under different conditions. They are investigations which are of importance to the tanning industry. They relate, also, to investigations on the conservation of leather, on the examination of leather, on the methods of analyzing leather, etc. Most of these are technological publications that have appeared in technological journals. Here [indicating] is a bulletin which represents some work on sumach as a tanning mate-

rial. As you know, sumach is a valuable tanning material. Until recently, probably the bulk of it was imported from abroad. This [indicating] is a popular bulletin giving directions and instructions as to how to collect, gather, prepare, store, and market the product and it was published for the purpose of stimulating the production of sumach in the United States.

Mr. ANDERSON. Is that a domestic plant or wild plant?

Dr. ALSBERG. It is a wild plant growing in the mountains, principally in the Appalachian Range, the best quality of it growing in the mountains of Virginia and Tennessee. There is any quantity of it, but the question is to stimulate its gathering or to teach people how to gather and cure sumac, so that it will fetch on the market a price corresponding to the price for the best Italian and Sicilian sumac. Here is another bulletin on the subject of country hides and skins. That is a farmers' bulletin. This bulletin appeared at about the time of the hearings last year; it was prepared in cooperation with the Bureau of Animal Industry and the Bureau of Markets, the purpose being to give instructions as to the best way of skinning animals, taking off the hides, and storing and handling them, so that the country hide may be more valuable than it is at the present time. At the present time the country hide is discounted tremendously as compared with packers' hides. That is due in part to the fact that they are not handled right or taken care of properly. That is not the only reason for the difference, but that is one of the important reasons. Here [indicating] is another bulletin which has appeared recently on the care of leather, which contains instructions about the care of leather. This was brought out as the result of many inquiries that we have received in regard to the care of leather, water-proofing leather, and the handling of leather, or such leather as farmers use around the farm. As I say, that was gotten out in response to inquiries.

There are a tremendous number of problems in connection with the tanning of leather. We are no longer getting as great quantities of cheap hides as we used to, nor have we available the vegetable tanning materials that we need. A tremendous amount of work is necessary in eliminating waste, in conserving both leather and tanning materials in the production of leather, in developing new sources of tanning materials, and in working out methods for utilizing the different kinds of hides for different purposes. There is a large demand, both on the part of farmers and tanners, for research work and for instruction in this matter. It is in response to this demand from the industry that the department is suggesting this appropriation. I can not state its purposes better than it has been stated here in this note.

IMPROVEMENTS IN MAKING LEATHER AND HANDLING HIDES.

Mr. ANDERSON. Is this primarily directed to developing new substitutes for leather or new leather materials?

Dr. ALSBERG. No, sir; it is not for that purpose at all. It is directed toward improving the methods of handling hides and of making leather, so that a less quantity of hides and of tanning materials may be wasted. It is directed to the discovery of substi-

tutes for some of the necessary tanning materials, but not with any thought of making a substitute for leather.

Mr. ANDERSON. Under what item was this carried out?

Dr. ALSBERG. Of course, it has not been done on this scale, but so far as it was done before it was done under the agricultural investigations item, which is the item we are asking to have increased from \$70,000 to \$100,000.

Mr. ANDERSON. How much were you allotting to this particular investigation out of that appropriation?

Dr. ALSBERG. Roughly, about \$7,000.

Mr. BYRNES. I do not hesitate to say that I do not think very much of this, judging from this bulletin that you have just handed to me. For instance, I find this on page 5:

Buy shoes on which the manufacturer is willing to stamp his name and address. If they do not wear well, try another make next time.

It seems to me that you must assume that people will exercise some common sense, and that when a man buys a pair of shoes that does not wear well he will try to find out something about it the next time he needs a pair. I read further:

Select shoes that permit standing, walking, and quick turning in comfort and safety, with no danger of slipping, turning the ankle, or falling.

Should we not presume that when a man goes to buy a pair of shoes he will buy a pair that will permit his standing, walking, and quick turning in comfort and safety? A man does not buy shoes with the idea that they will not permit standing or walking, or that they will expose him to the danger of falling down. It occurs to me that the man who wrote this bulletin ought to be cashiered. Here is another statement:

Shoes will not retain their shape and good appearance unless they fit properly. Shoes with heels which throw the wearer's weight upon the toes or are so small to support solidly the weight of the body lose their attractive appearance and their serviceability much more quickly than those with heels which permit the feet to maintain their normal position in standing and walking. Moreover, shoes which are too short or do not fit in some other respect, as well as those which force the body into unnatural positions, are uncomfortable and give rise to foot trouble.

And so forth.

There is not a man living who ever bought a pair of shoes who does not know that, and it is difficult to conceive of a man sitting down and publishing stuff like that. To my mind, this is the worst thing I have ever seen in the way of an unnecessary publication. I can not conceive of any reason why the Bureau of Chemistry should be advising the people of the country to buy shoes that will not be uncomfortable, because that is one thing that every man does know.

Dr. ALSBERG. Do you not think that that is rather incidental to the rest of it?

Mr. BYRNES. I have not read the rest of it. I have read these extracts near the beginning of the bulletin. You handed it to me, and I began to read it. That is in the first part of it. I do hope that the rest of it is better.

Dr. ALSBERG. Those are things that most people do not pay any attention to, are they not?

Mr. BYRNES. Do you mean that they do not pay attention to the matter of having shoes that fit them?

Dr. ALSBERG. Lots of people do not.

Mr. BYRNES. That is one thing that a man does pay attention to. If he does not, his attention will be sharply called to it in a very short while.

Dr. ALSBERG. Of course, that is incidental. The bulk of the bulletin is taken up with the matter of waterproofing, greasing shoes, etc.

Mr. BYRNES. I should think that would be covered by the instructions as to how to preserve leather, and that instructions to consumers as to how and where to buy shoes would be unnecessary. If there is anything more to the bulletin, it is unfortunate that the man started it in that way, because if a man wanted to find out how to preserve leather, and takes up this bulletin, by the time he gets through reading this matter on the first two pages he will not read the rest of it.

Dr. ALSBERG. The bulk of it is taken up with that sort of material, or with methods of waterproofing, greasing, and the handling of shoes and leather.

PREVENTION OF GRAIN DUST, ETC.

Mr. ANDERSON. Take up the next item, please.

Dr. ALSBERG. The next item is No. 75, for the investigation and development of methods for the prevention of grain dust, smut dust, and other plant dust explosives, and resulting fires, including fires in cotton gins and cotton-oil mills.

This work arose originally as a result of a demand from the milling industry. There was a disastrous explosion and fire in Buffalo in 1913. Inasmuch as an explosion was involved, it was taken up by the millers with the Bureau of Mines. The Bureau of Mines acted for the millers in an advisory capacity, but said that it had no authority in its organic act to carry on any work of that kind. Therefore the Bureau of Mines directed the millers to the Department of Agriculture, and there has been a cooperative arrangement between the Bureau of Mines, the Bureau of Chemistry, and the industry by which this work was carried on. It was very soon found that flour dust and similar dust had a terrific explosive force, which constituted a very serious danger to the industry.

About the time this work was started in a very small way—again carried, Mr. Chairman, in the item for agricultural investigations, to which we have referred in connection with the leather work now being carried on—the department received complaints that the grain thrashers of the Pacific Northwest were being dynamited by the I. W. W's. An investigation was asked for by those suspecting that there might be some other cause. It was soon established that this was an explosion of the smut in the grain. As a result, the department carried on an investigation showing that this was due to static electricity. Fans to remove the smut were designed for the thrashing machines, the combination thrashers, with a wiring system to ground them so there would be no possibility of the static electricity to accumulate. As a result, the fans that are now going into this section, into many of the sections of the Pacific Northwest, are now being constructed by the thrashing machine building companies, and with this equipment this particular very serious hazard to the grain producers of that section of the country has been

largely eliminated. All that remains to be done in this particular phase of the work is to get it before the farmers and thrasher men in one or two sections, particularly around the Walla Walla section, where this work of the department is not known. At the same time it appeared that these fans, which were designed by the department, cleaned the grain so thoroughly that the plant pathologists believed they could be made a very potent factor in preventing the spread of the stinking smut of the Pacific Northwest. Cooperation was started with the Bureau of Plant Industry and the Bureau of Markets in that direction. These bureaus are now taking over the development of this work and the Bureau of Chemistry is assisting them in an advisory capacity.

During the war, as I reported to the Committee on Agriculture, in former years a demonstration campaign was put on by the department in cooperation with the Food Administration to educate the employees of the grain mills and elevators with reference to the hazards of dust explosions, with the result that there was almost no loss to the United States Grain Corporation; during the years it was functioning its total loss was only about \$25,000, and that was the result of one single accident of this kind. During the year 1919-20 there was no appropriation for this particular work. The Grain Corporation regarded it as so important that it asked the Secretary of Agriculture whether he would have any objection to the Grain Corporation taking over the appropriate staff of the Bureau of Chemistry. This transfer was made so that in the year 1919-20 the work was done by the Grain Corporation and on 1st of July, 1920, the force which was engaged in this work was disbanded by the Grain Corporation when it went out of existence. At the present time there is in the department only a small amount of work going on in this direction. There has been a great demand on the part of the industries and mills and grain elevators. There have also been a number of serious fires and explosions in cotton gins and cotton oil mills. In a small way the bureau has investigated the latter and has convinced itself that static electricity is a factor in the development of these cotton gin fires and explosions.

Here [exhibiting] are some of the publications on this particular subject which may be of interest to you, some of which have been gotten out in cooperation with the United States Grain Corporation.

Here [exhibiting] are photographs of the sort of damage that occurs in these mills—they are photographs of very recent fires. It is very important to these dusty industries which are mostly food-producing industries or else cotton gins or cottonseed mills that this matter be studied further.

I may say incidentally that as a result of the bureau's work the insurance rates in several lines have been materially reduced. There has been a very great reduction in the insurance rates on thrashing machines in the Pacific Northwest, and there have been reductions in the rates on cotton gins also.

I want to say that there has been a tremendous demand for these publications. The underwriters are reducing the rate to those who will accept and apply the recommendations which have been made in some of these publications.

Of course during the past year we have been able to do very little in this direction; we have not been able to touch anything except grain

elevators and flour mills. We have not been able to do anything for the other food industries—for instance, starch, sugar, and dextrine. Last year there was a large explosion in the Douglas Co.'s plant at Cedar Rapids, which killed a considerable number of people and did damage to the extent of \$3,000,000 or thereabouts. We have not been able to make any investigation—

Mr. ANDERSON (interposing). What kind of a plant was that?

Dr. ALSBERG. Starch. It was a corn-products plant producing starch. Starch dust will explode with great violence, and they had a violent explosion there.

INVESTIGATION OF THE PRODUCTION OF VEGETABLE FATS AND OILS.

Mr. ANDERSON. Take up the next item, please.

Dr. ALSBERG. The next item is No. 76, for investigating the production and utilization of vegetable fats and oils.

There has been a demand on the bureau from the oil mills, and by oil mills I mean those crushing cotton seed, and oil refineries for us to make investigations to improve the methods for producing oil products, cotton oil, peanut oil, soy-bean oil, and olive oil.

It seems that the methods now used by the industry are, to a large extent, rule-of-thumb methods. For example, nobody has ever taken the trouble to investigate what is the best temperature to cook cotton seed as a preliminary to extracting the oil. There can not be any doubt but that it must make a lot of difference finally as to the quantity and quality of the oil what treatment you give the cotton seed before you put it in the press. We have had repeated requests for information from oil crushers as to the best practice which they should follow. We have but little information. It may be that some of the larger concerns, like the Southern Cotton Seed Oil Co. or the American Cotton Oil Co. have made such investigations. If they have they have kept them locked up carefully in their records. There is not anywhere any information on that particular problem at the present time, and there are scores of problems just like it. The cotton-oil industry feels very strongly that the department should help it by solving some of these problems that the industry is not in a position to solve for itself. It is in response to such requests for information, which we have been getting for the last decade, and which we have not been able to meet, that we have suggested this appropriation.

Mr. ANDERSON. Are you spending any money on this work now?

Dr. ALSBERG. We are spending a very small sum, perhaps between \$500 and \$1,000, because we can not turn down inquiries that come in. We have to do the best we can to help the people who are asking for assistance.

Mr. BYRNES. What can you do with \$500?

Dr. ALSBERG. In saying that we were spending perhaps \$500 to \$1,000, I was trying to estimate the amount of time that is spent by men engaged on other work replying to letters, hunting up information, and that sort of thing. We are doing nothing else. The first thing that we would do would be to go down to an old plant somewhere in a favorable location in the South and undertake to get a quantity of uniform cotton seed of one kind with one oil content.

We would then cook it in commercial cookers under a great range and variety of conditions. We would then press the lots treated in different ways under the same conditions, and we would determine the yield of the oil and the refining loss and the quality of oil in order to arrive at the best method of cooking. That would be the first step in that work.

Mr. BYRNES. The note says that you intend to investigate other oils from seeds and plants now little used. Do you intend to make such an investigation as that would indicate?

Dr. ALSBERG. There are some seeds and oils produced in small quantities in various places which are not now used for oil. Take, for instance, wild mustard. As Mr. Anderson knows, it occurs considerably in wheat and is separated, and a certain amount of wild mustard is actually used for oil, but a relatively small quantity. There is a very large tonnage of that seed. It is not good for stock feed because it contains some poisonous ingredients. It is a weed seed which should be used by extracting the oil, and the cake could go into fertilizer. To a small extent, that is being done now. There are other weed seeds that grow in wheat, barley, and rye that should be studied. Tomato seed—there is a tremendous quantity which is a by-product of the manufacture of tomato pulp in the production of tomato catsup. The tomatoes are crushed in a machine, and the machine removes the seeds and cores. It may be said that there is about 25 per cent of oil in them. No oil is being produced from them. There are a lot of little wastes going on in the country that will bear looking into.

INVESTIGATION OF SORGHUM.

Mr. ANDERSON. Take up the next item, please.

Dr. ALSBERG. The next item is an entirely new proposition. The thought behind it is this: The amount of land which in the dry-farming area can be kept under cultivation is to a considerable extent dependent upon the price of the grain sorghums. All through that section of the country which extends from western South Dakota to western Kansas, western Nebraska, eastern Colorado, and western Oklahoma and down into northern Texas, the only crop that can be depended upon continuously year after year is Kaffir corn or milo or one of the milo grains, one of the plants which we call grain sorghums. A grain sorghum has about the same composition as Indian corn or as maize. We have made a preliminary study of the composition of grain sorghum by taking the seeds and dissecting them and analyzing the different anatomical parts separately. From the results obtained we conclude that it would be possible to make from grain sorghums the same materials that are made out of corn in the corn-products industry. That is to say, starch, glucose, dextrine, and oil by-products; it will perhaps be possible to make additional products, such as wax. The price of sorghum grain ordinarily is considerably below the price of corn. It should sell about 15 per cent below the price of corn. That is, if corn is \$1, the sorghums should be about 80 or 85 cents or less.

There is as much starch and nearly as much oil in it as there is in corn, and it ought to be possible, therefore, to produce starch,

glucose, and other products from grain sorghums in about the same way as you produce them from corn. In other words, it ought to be possible to establish, if you want to, a grain sorghum products industry. If such an industry can be established it will widen the market for these grains, and anything that can be done to broaden the market for these grains will have a tendency to raise prices. Anything that has a tendency to raise the prices of these grains will tend to make it profitable to farm over a larger area of this dry land than can be farmed at the present time.

So the point behind this suggested appropriation is to create a new market by the utilizing of grain sorghums. If that can be done it would be of tremendous importance to the dry sections of the country.

Mr. ANDERSON. Is there anything further that you want to discuss?

Dr. ALSBERG. I do not think of anything, Mr. Chairman.

THURSDAY, DECEMBER 30, 1920.

BUREAU OF SOILS.

STATEMENT OF DR. MILTON WHITNEY, CHIEF.

READJUSTMENT OF AND INCREASES IN SALARIES—ELIMINATION OF LOWER GRADE POSITIONS.

Mr. ANDERSON. Dr. Whitney, we will start with your statutory roll. I understand that item 1, chief of the bureau, will be discussed by Prof. Ball, so you can start in with your first change, which is in item 3.

Dr. WHITNEY. We have an editor who has been with us for a number of years. He is charged with very responsible duties, particularly in the editing of the soil survey reports, which is a very large and involved piece of work and requires a great deal of technical knowledge of the soil survey. This man has been with us for 19 years and has not had a promotion for 16 years; he is an exceedingly able man, and at the salary we are paying we could not possibly replace him, and it is very doubtful if we can hold these men at these salaries. This promotion should really have been made years ago. I have been trying to get it done for years. Regardless of war conditions, men of this caliber should be receiving more than he is receiving.

Mr. ANDERSON. This place is in lieu of one administrative assistant at \$2,100, item No. 4.

Dr. WHITNEY. Yes.

Mr. ANDERSON. Take up item 5.

Dr. WHITNEY. This is the executive assistant in charge of the soil survey. Of course, the scientist in charge of the soil survey looks after the whole thing, but this particular man, who has been in the department for 27 years and has been with us since the beginning of the soil-survey work, has charge of all the details of the parties. He arranges the supplies and sees that the supplies reach them and that

the assignments are made, and keeps the entire force all over the country actively engaged in work. He also has general supervision of all the details of the field work and the office work, the drafting of the maps and the completion of the work in all its details except the editorial writing; and he is a man also whom I have been trying to get promoted for a number of years. He is one of those executive assistants upon whom we rely, and have to rely, for the details of the work being properly carried out.

We have been short of medium salaried clerks, or, rather, what you might call senior clerks. We have had a good many of the cheaper places, \$1,000 and \$1,200, and we have several of the \$1,800 places. We have very few of the intermediate places, so there is a big range there. We have had four \$1,000 places that we have been unable to fill with anyone for continuous service; that is, it is almost impossible to get a \$1,000 clerk, and when we do fill such a position it is only for two or three months, and then they go somewhere else.

Mr. ANDERSON. What is the character of work done by these \$1,000 people?

Dr. WHITNEY. The \$1,000 places are routine.

Mr. ANDERSON. File clerks?

Dr. WHITNEY. Yes, sir; file girls, typewriting, stenography, and we simply can not get them. In lieu of these \$1,000 places, which are very expensive and are more expensive than they seem because we lose so much time and energy in the places being vacant and in training the people when they come in, we think it is very much better if you would give us two \$1,600 and two \$1,400 places, so that we may hope to get more experienced people. The department, as a whole, is very short of stenographers. If we want an expert stenographer to report conferences or hearings, there are only a few in the whole department who have the ability to do this class of stenographic work. In our own bureau we have found it very difficult to get people for these low salaries that can do even fair stenographic work. These \$1,000 places have become a burden.

Mr. BYRNES. A \$1,000 clerk with the bonus gets \$1,240, and you can not get a stenographer for \$1,240?

Dr. WHITNEY. No.

Mr. ANDERSON. You can get a file clerk for \$1,240, can you not?

Dr. WHITNEY. It is very difficult. We can not get any satisfactory ones who will come to stay.

Mr. ANDERSON. I do not imagine anyone would want to stay in the position of file clerk all their life for any reasonable amount of money that an organization could afford to pay.

Mr. BYRNES. Not if he was a competent file clerk.

Mr. ANDERSON. You can not expect to get in these lower-grade positions people who are willing to stay there for life.

Mr. HARRISON. The Civil Service Commission, you know, Mr. Anderson, indicates the compensation for clerks and stenographers; that is, in announcing the examinations it indicates the salaries that will be paid, and in the early days of the war it announced a salary of \$1,200 for stenographers. It was offering every inducement to get people to come to Washington, and the departments have not been able to secure any stenographers for less than \$1,200 and frequently they have been compelled to pay \$1,400.

Mr. BYRNES. I know that was true during the war, but what is the status now?

Mr. HARRISON. So far as I know, there has not been any considerable increase in the number of good stenographers on the eligible register. That is due to many factors, one of which is the discussion about the excess of employees in Washington and the necessity of cutting down the force, causing many people to hesitate to take the civil service examinations.

Dr. WHITNEY. The Civil Service has quite recently urged us to allow them to state in their examinations that the salary of \$1,000 will carry with it a bonus of \$240.

Mr. HARRISON. Yes; they have urged us repeatedly to state that flatly; but we have always refused, because we feel that an employee should render at least one month's satisfactory service before he receives the bonus.

Mr. BYRNES. What percentage of the employees are denied the bonus?

Mr. HARRISON. Relatively few, Mr. Byrnes.

Mr. BYRNES. If relatively few are denied the bonus, it seems to me there is not much to that idea on the part of the department.

Mr. HARRISON. We feel that we are carrying out the intention of Congress in the matter. Under the law, certain employees are not entitled to the bonus automatically. In such cases the head of the department is required to certify that the employee has rendered service sufficiently satisfactory to justify the bonus.

Mr. ANDERSON. Was not that provision put in with particular reference to people in the departments; that is to say, I do not suppose Congress intended to provide a bonus for men who were getting all they were worth in the departments, and for that reason they put in a provision with respect to certification by the heads of the departments. Of course, I am not undertaking to interpret what Congress meant, but it does not seem to me that that provision is particularly applicable to people coming into the service.

Mr. HARRISON. Anyone who had been in the service, you will recall, for more than a year automatically received the bonus, whether their service warranted it or not, but Congress specifically included two limitations in the law—that anyone who had entered the service since June 30 of the preceding year—

Mr. ANDERSON (interposing). The presumption was, of course, that if you kept a man for a year he was satisfactory or you would not have kept him.

Mr. BYRNES. At the beginning of the war the departments were taking on a number of new clerks, and it was meant to apply to those clerks who had been taken on, who had not served a year, and it applied peculiarly and particularly to them.

Mr. HARRISON. Our position throughout has been consistent.

Mr. BYRNES. The employee is required to render at least one month's service, so that we can determine on the basis of performance whether he shall receive the bonus. Now, many factors enter into the determination of whether an employee's services are satisfactory. We must take into consideration the salary he or she is receiving, whether or not he or she is rendering reasonably satisfactory service, service such as could be expected at that salary, before we give them

a bonus. It is denied to employees in the department when we do not feel that it is justified.

Mr. BYRNES. Do you state in the announcements, through the Civil Service Commission, that an employee whose services are satisfactory at the end of one month will receive the bonus?

Mr. HARRISON. May be allowed the bonus.

Mr. BYRNES. Is that the way you state it?

Mr. HARRISON. Yes, sir.

Mr. ANDERSON. The civil service announcement has a little statement at the bottom to the effect that if the services of the employee are satisfactory they may be allowed a bonus of \$240 per annum, or something of that sort.

Dr. WHITNEY. Of course, that pertains to the year or the fraction of a year before we get another appropriation bill.

Mr. HARRISON. The Civil Service Commission very naturally is interested in attracting people to the Government service and naturally it wishes to make the terms as attractive as possible.

Mr. BYRNES. While we are on this subject, let me ask you a question, because you are familiar with this matter. I have had employees tell me, and I think employees from your department, that one difficulty that they have found is the fact that a good stenographer will be assigned to work so ridiculous, merely copying, and never be given a chance to demonstrate their worth, and while we are talking about the matter an instance comes to my mind. I served in an office once as a stenographer, and the woman who was the head stenographer in this law office and one of the most competent women I ever knew in an office, came up here about four years ago and was sent to the Department of Agriculture, and I would not be surprised if it was not the Bureau of Soils; but anyway this woman, whose competency I could pay tribute to anywhere as being about the best all-around stenographer I ever knew, was assigned down there to copying and doing work that a 17 or 18 year old boy would do, which naturally made her very much dissatisfied, and after complaining she quit, and of course immediately opened an office in the city here, a stenographic bureau, where she has had about 8 or 10 stenographers under her, and I understand has made a very large income for the last four years. From all accounts more than the Chief of the Bureau of Soils has made in his salary, and I have no doubt more than you have made in your salary, which shows a lack of discrimination somewhere, and shows that somebody ought to go among your employees and find out those who are competent and not allow a woman who can go out into the business world right here in the city of Washington and make that much money running a stenographic bureau to be put at work copying and addressing envelopes in the bureau.

Mr. HARRISON. As I see it, that is one of the needs of the department—an officer such as large corporations have, who would aid in fitting every employee to the particular task for which he is best qualified.

Mr. BYRNES. Is the remedy to have such an employment officer?

Mr. HARRISON. I think that would be very helpful to have an employment officer, as distinguished from an appointment clerk, who would be in position to adjust situations such as you indicate. That is what is done in the large corporations.

Dr. WHITNEY. Mr. Byrnes, of course we do not attempt to keep experts of that kind in the bureaus. We have not work enough. Most of my clerks should be able to do stenographic work, because it comes up all the time. My chief clerk can take down notes for me in shorthand and most of my principal clerks can take down notes in shorthand, and it is always an aid. It is a great advantage to anyone to know shorthand. We want our clerks to have a knowledge of shorthand so as to be able to use it when required. We do not have a great deal of constant stenographic work, and we have to use them for other things. You would not want us to have stenographers and just keep them on stenographic work and deny us the right to use them for anything else. Three or four times a year I have hearings that need to be reported. I never depend on any of my clerks; I have not any such stenographers as that. I go to the Secretary's office and ask to have a reporting stenographer assigned to me for that time, for a morning or for a day, and that is all. I have nothing more then to do with him.

Mr. BYRNES. Of course, that is the sensible thing to do. It would not be necessary for all the bureaus to have a number of stenographic reporters, but the whole department having a few of them should assign them to the bureau conducting hearings.

Dr. WHITNEY. That is what is done. A clerk who can take down stenographic notes has a different rating in the civil service and has a different value, and has an increased value over a clerk who can take things down only in longhand. Even if they do the same work, their ability to do stenographic work, to shorten things up, gives them a certain value, but we do not pretend to indicate that our stenographers do stenographic work all the time.

Mr. ANDERSON. The next change is in item 15, on page 162.

Dr. WHITNEY. We have asked for an increase of \$400 for a photographer now carried on the lump-sum rolls. We have had for a long while a statutory position of photographer at \$1,200. The photographic work that we do is rather exacting. It is extremely accurate line work, map work, and requires a very high order of skill, and involves the use of the wet-plate process. There are very few photographers now that can use the wet-plate process, and for our work this process is necessary, and we must use very large plates, which greatly increases the difficulties. It has been absolutely impossible for us to fill a \$1,200 place with a photographer that can handle the work.

Mr. BYRNES. How does that salary compare with the salaries paid photographers in other bureaus?

Dr. WHITNEY. It is very low. Mr. Harrison, perhaps you can tell about that.

Mr. HARRISON. Yes; it is low. They run from \$1,600 to \$1,800, Mr. Byrnes, and a few of them get a little more than that.

Mr. MAGEE. The Commission on Reclassification of Salaries of Federal Employees has made a report. How can we go into this question of salaries in one department without going into the question in other departments? It seems to me the way to remedy inequalities which may exist is for Congress to take up consideration of the report of that commission.

Dr. WHITNEY. I do not know if it is shown there is an irregularity there, that there is a low place, much lower than others, and \$1,200 for a photographer is ridiculously low.

Mr. MAGEE. That is true in a great many departments. There is a class of employees called to my attention more underpaid, for instance, than the custodian employees who are paid by the Treasury Department and do work similar to other employees in Federal buildings who are paid by the Post Office Department and get \$500 or \$600 per annum more.

Dr. WHITNEY. Suppose in the same department 12 of them got \$400 and 1 of them got \$900, and you found there was 1 among these you had provided for who only got \$900—

Mr. MAGEE (interposing). There are so many of those cases you cannot take up one in your department without taking up the cases in the other departments. For instance, take the National Training School for Boys; the employees there, in my judgment, are so underpaid that it is almost indefensible, and their salaries ought to be remedied, but how can a committee take up and remedy one case without taking up the cases generally? As I understand, that is the reason Congress appointed this commission, and the commission has made its report for a general reclassification of salaries of Federal employees. I can appreciate how each one wants his particular case attended to, which is very meritorious, but it seems to me, so far as a member of Congress is concerned, if we are going into this question of salaries, we have got to treat the Federal employees generally and iron out the inequalities generally, and that we can not take care of one and leave some other one entirely without any case.

Dr. WHITNEY. Do you not think it is our duty to bring these things before you?

Mr. MAGEE. That is what I say, and that is all right, but it is my duty also to call your attention to the fact as to what Congress has done and to the only reasonable way to get at the proposition.

Dr. WHITNEY. But Congress has not acted on this reclassification.

Mr. MAGEE. That is very true, and it seems to me you can not get redress in any other way. I am very frank to say that, so far as I am concerned, I am not going to attempt to take care of one employee and ignore some other employee who is just as worthy and perhaps gets less salary. If I am going to do anything, so far as I am concerned, I am going to attempt to treat them all on the same basis and iron out the inequalities and treat them alike. I am not going to play favorites.

Dr. WHITNEY. Until Congress acts on the whole matter, you propose letting these inequalities stand?

Mr. MAGEE. I do not propose to take care of one without doing anything for the other fellow, and your case here is not half as bad as hundreds and thousands of other cases in different departments of Government. If you do not think so, go down and talk to Secretary Moyle of the Treasury Department in reference to the custodian employees, go and talk with the officials of the National Training School for Boys in reference to the salaries they pay, go to the Marine Guard and talk with them about it, if you want to hear about real inequalities, and, in my opinion, some real injustices done

to Federal employees. I know what I am talking about. I have heard this tale of woe day in and day out in all the different departments, and I sympathize with them, and the inequalities ought to be remedied, but there is only one reasonable way to do it, and that is for Congress to take up the report of the committee on reclassification and iron out the inequalities. Of course, I am only speaking for myself.

Mr. ANDERSON. If there is nothing further on the statutory roll, Dr. Whitney, we will take up the next item. Item No. 29 is your general language and there is no change in that.

Take up item 30.

FOR CHEMICAL INVESTIGATIONS OF SOIL TYPES, ETC.

Dr. WHITNEY. Mr. Chairman, Congress has appropriated \$23,110 for chemical investigations of soils, a matter that is very large and very important, the soil being the fundamental basis of our prosperity and living, and we have asked an increase of \$19,430.

When I came into the department the study of the chemistry of the soil had been pretty nearly abandoned, and no one seemed to know what to do. They had been following Liebig's work for 70 or 80 years, but had made little progress. The bureau has been working on the problem and has opened up new lines of thought, and has inspired the scientists of the world with new ideas and the desire to attack this great fundamental question.

When I was at the Johns Hopkins University, Dr. Remsen advised me to go into agricultural chemistry. He said, "It is a very big thing and I would not attempt to go into it myself, but you will find it a very fine line to travel." I went with Prof. Johnson and Dr. Storer, the old scientific minds of the country—I was with them for years—and when I came into the department I began to clear up the situation. Now, we are beginning to understand the soil, its composition, and its relation to crops.

We have been working as well as we could with the small force at our disposal. Twenty-three thousand dollars for such a problem as this!

We have inspired the experiment station workers of this country, the college workers, the State officials, the scientists of England, France, Germany, Japan, Russia, Australia, and Canada, who have all been following our work, and there is the beginning now of a new era in soil investigation.

During the last year we established two lines of investigation that we are very anxious to push further. I wrote letters to the directors of the stations and the presidents of the colleges about three months ago, telling them that we had found this—that we had taken tons of soils, had extracted the soil solution, and had evaporated that down at ordinary temperatures, and found the crystalline forms of material that were in the solution. These materials are essentially the same as are in the Stassfurt deposits of Germany, in the Alsatian deposits in France, and in the other deposits of the world. In other words, we find that the soil extract contains the same things as these natural deposits, the materials being brought down from the soil through the streams, the rivers, and the oceans, and on evaporation

yielding these great deposits that are mined. In the soil we find kainit and sylvite, the same minerals for which we have paid Europe \$50,000,000 this year for application to our soil—in other words, the origin of these deposits was the soil itself—they simply came out of the soil, went through the rivers into the oceans and were redeposited.

Now that we have found the real properties of the soil solutions and its complexes, we are in a position to begin to understand the soil itself, how it nourishes the plants, and we hope to be able to find out how the addition of these fertilizing materials changes these complexes for the improvement of crops. In other words, this has been a great discovery by the department. We have found the sources of the potash deposits in the soil. We have identified the salts and have classified them, and now I have appealed to the presidents of the colleges and the directors of the experiment stations to help us get the information that will enable us in the shortest possible time to see what this means. The discovery has created quite a profound impression. It means the beginning of a new line of chemistry of the soil, but the leadership in this must be in the Department of Agriculture.

Mr. MAGEE. Is this appropriation from which you investigate, for instance, the soil of some particular county?

Dr. WHITNEY. No, sir; that is the soil survey, but this is the fundamental investigation of the soils we map with a view to determine why some of the soils are adapted, for instance, to tobacco and some to corn and potatoes.

Mr. MAGEE. A very important work.

Dr. WHITNEY. It is fundamental work. It is not spectacular work; it does not show for very much; you can not make newspaper stories out of it, but it is the underlying work; it is the slow fundamental work that is going on all of the time.

FOR STUDY OF SOIL SOLUTIONS.

I have asked that of this increase \$8,150 be given for the study of the soil solutions. We have to examine the important soil types to see how they differ and what the significance of the difference is.

Mr. Chairman, in connection with the same investigation we have found through the use of new instruments, many of them devised in our own laboratories, that it is possible to centrifuge the soil solutions before we get the crystalline matter, and thus we have been able, for the first time to obtain large quantities of very pure colloid material. We call it ultraclay. It appears on the filters after we have passed the solution through. We have been able to collect it on the Pasteur filters and to study it to greater advantage than has been possible heretofore. This soil colloid is the material that contributes very greatly to the plasticity of the soil, is what gives binding power. The clay that we have around Washington, the red clay, is plastic; it hardens on drying and it softens on wetting. We have extracted the colloids from this clay and are studying its properties. It is very interesting. If we take colloids out of a very plastic clay the clay loses much of its plasticity. The colloid itself absorbs gases, it absorbs potash, it absorbs lime—it is the dominant absorbing agent of the soil. Its absorptive power can be destroyed. It is destroyed

by combustion; in some of the cases we have studied it is killed at 1,350° C., and when it is killed the soil loses all its powers; it looks like soil, but it does not stick together when wet and it does not absorb ammonia potash; it has lost completely its power of absorption; it has lost its binding power.

INVESTIGATION OF SOIL COLLOIDS.

We have developed methods by which we can determine the amount of the colloids in the soil. We are analyzing to determine the composition. It is essentially a silicate of alumina; it goes into a neutral state. It is a very big subject. Its properties are imperfectly understood. The colloidal solution is like an emulsion; it is like a fog. Water in the liquid form has certain definite laws that we understand pretty well. The absorption of vapor of the water we understand also, because it obeys certain well-known laws; but when you get a fog it obeys none of these laws; it is not liquid, it is not a gas, and we do not understand it. That illustrates something of the nature of these colloids.

The soil colloids we have been working with absorb as much ammonia as charcoal. Charcoal has been the highest absorbing agent that we have. We have been using it in our nitrogen works to absorb the ammonia that is formed. We find that we can use the soil colloid; it has the same power, but that probably can be killed; it can be modified. We want to make a study of it so that we can control the plasticity of the soil and can control the physical condition of the soil. That is the hope that this work presents.

We have at last got at the material that causes the trouble in plowing and cultivation, rain and drought, and there is some hope now of being able to relieve this trouble.

Mr. HARRISON. Would it not be advisable to explain to the committee the relation of this work to the road program?

Dr. WHITNEY. Yes, sir.

I do not like to claim too much for the Bureau of Soils, but some time ago the road people asked my advice about the breaking down of roads and I said that the road engineers had not been giving consideration to the foundation, to the soil. They have contract specifications for a piece of concrete road 10 miles long, 7 inches thick in the middle and 5 inches on the sides, made out of concrete with certain specifications, and they run this regardless of the subsoil.

I called their attention to the fact that it was over certain soils that they had trouble, it is not over all soils, but it is over places where weakness develops. I said if you go up a hill the road is likely to be broken just before you get to the crest where there is a change in the texture of the soil material, because water comes out and there is seepage, and wherever the water comes out there is a weakness developed. If you are going to lay your road with the idea of having it permanent you must be prepared to reinforce the places where the soil base shows weakness, the foundation. It is just like building a house. You do not build a house on specifications; you have to dig down to find what the foundation is, what the material is. The engineers have to understand the foundation before they can put up a house. They have not studied that with regard

to the roads. They have now taken up this whole matter of road construction and road maintenance with the idea of fitting their road construction to the foundation soil. The Bureau of Public Roads now has its engineers, as well as many of the experiment stations working on these lines. This soil colloid that we are studying is a subject that they must understand and take into account.

Take the clay we have around Washington. It is silicate of alumina. Now, to make Portland cement you take that silicate of alumina and put in an excess of lime and heat it to something like 1350°, where the soil colloid is killed. At that temperature the lime goes in and makes a silicate of lime—alumina, the lime having gone into combination, and that makes the Portland cement. Any hydrate of Portland cement takes up water and goes into the colloidal state, because Portland cement is a colloid and hardens, and that setting goes on for months. It gets harder and harder as this colloidal condition progresses through the mass. The colloid that is wanted must be impervious to water. A soil colloid is pervious to water. If we introduce lime into that combination, that would fix it as a hard cement surface, but the expense of that is too great. The plan of road construction has been changed, and they are now working out the soil weaknesses, especially where two types of soil come together.

Gentlemen, this is a very fundamental thing, worthy of the most intensive investigation by the department, but of fundamental importance in agriculture, in cultivation, because we have reason to hope that having recognized this—I could have brought up a pound or two and showed it to you—having recognized it, having isolated it, we will be able to modify it. That is what we have to do in agriculture—modify it—and in the roads they have to work that out for their own salvation. The success of a road is dependent upon the maintenance of the road—it is not solely a question of building, it is also a question of keeping it up, and where these weaknesses develop they have to overcome them. In the same way the man who cultivates his fields has long been wanting ways of making the soil less plastic and better drained. His difficulty is largely due, in our judgment, to this colloid that we have been able to separate from the soil.

FOR PHYSICAL INVESTIGATIONS.

Mr. ANDERSON. Take up the next item, Dr. Whitney.

Dr. WHITNEY. Mr. Chairman, I called your attention to the fact that \$23,000 was very, very small for chemical investigations of the soil, and I also want to call your attention to the fact that the current appropriation of \$12,225 for the physical investigations is very, very small. That is so small that we are making very little progress. We have asked for an increase of \$5,000. I think you realize that important work of this kind will justify that increase.

Mr. RUBEX. You asked for this same increase last year, but you based it upon an entirely different reason?

Dr. WHITNEY. The physical investigations?

Mr. RUBEX. Yes, sir. If I remember correctly last year you wanted this money to do some similar work in the nitrogen investigation?

Dr. WHITNEY. Yes, sir. As a matter of fact, the physicist and the physical force is partly still assigned to that nitrogen work on account of the training of the men. It is a part of the physical soil investigation and we use the same men, we use the same employees, and we use the same facilities. We are going to ask for an increase in the nitrogen work so as to continue that and I am also asking for an increase of \$5,000 so that with the release of these men from the nitrogen work we will have a sufficient appropriation to do other investigative work. At the present time the fund for physical investigations is taken up with the routine analysis of the soils and with the devising of instruments for use in the investigative work, the shop work, and things of that kind. I have really only one man, a young man, who is doing any physical research work on soils.

FOR EXPLORATION AND INVESTIGATION OF POTASH, NITRATES, ETC.

Mr. ANDERSON. Take up the next item, Dr. Whitney, please.

Dr. WHITNEY. For exploration and investigation within the United States to determine possible sources of supply of potash, nitrates, and other natural fertilizers, there is no change.

Mr. BYRNES. What investigations are being made under this item?

Dr. WHITNEY. The possible sources of supply of potash, nitrates, and other natural fertilizers?

Mr. BYRNES. Yes, sir.

Dr. WHITNEY. We are doing a great deal of work. I am asking to have some of the lines of work split off with separate appropriations.

These are all connected—this and the three following items are all connected—so, I think, as we go on you will see, Mr. Byrnes, what we are doing in the investigation of fertilizer resources. My effort is to take some of them out and to put them on an independent basis, because they are for specific things, leaving the fund for the investigation of fertilizer resources for the more general work. In other words, when we get a subject—

Mr. ANDERSON (interposing). What do you mean by “general work?”

Dr. WHITNEY. There is the investigation of garbage as a source of fertilizer. Through the work of the Bureau of Soils city garbage has come into quite a prominent place as a fertilizing material. We contributed quite materially to that. We are still looking for deposits of nitrate of soda in this country. We have not very much reason for believing that we will get workable deposits, but we should continue the search. We are still looking for possible deposits of potash and we are working on phosphates and the economic use of our phosphate rock deposits. That is being carried on now under the item for fertilizer resources. These investigations have gone so far, they have gone to the point where they are about ready to be taken up by commercial interests. Because we have them in definite shape we want to have an appropriation now to finish the work.

Mr. BYRNES. What do you mean by having it in definite shape—what have you in definite shape?

FOR THE INVESTIGATION AND DEVELOPMENT OF METHOD FOR FIXING
ATMOSPHERIC NITROGEN IN FORMS SUITABLE FOR FERTILIZER USE.

Dr. WHITNEY. Let me go on to this next item.

Mr. BYRNES. You can proceed in your own way, if you can give us the information.

Dr. WHITNEY. Yes, sir.

Mr. RUBEY. Last year under this item we gave you \$5,500 for phosphate fertilizer investigation?

Dr. WHITNEY. Yes, sir; last year.

Mr. RUBEY. Are you continuing to do that work?

Dr. WHITNEY. Yes, sir.

Mr. RUBEY. In the next two items I take it that you have asked for the nitrogen fixation investigation?

Dr. WHITNEY. \$35,000.

Mr. RUBEY. And also the potash investigation?

Dr. WHITNEY. Yes, sir. I think I can explain this. We have asked for \$35,000 for the investigation and development of methods for fixing atmospheric nitrogen in forms suitable for fertilizer use. We have been working on that for a number of years under the general appropriation for investigating fertilizer resources. We put up the first Haber machine that was built in this country, and we fortunately had it at Arlington at the time the war came on. The War Department asked us to cooperate in that work, and put in a considerable amount of money. After the armistice they decided to transfer their investigative work over to the American University, and they asked us to cooperate with them over there. Therefore, we moved the entire apparatus from the Arlington farm to the American University.

Mr. RUBEY. Is that a private institution?

Dr. WHITNEY. It is under the War Department.

Mr. RUBEY. It is under Government control?

Dr. WHITNEY. Yes, sir.

Mr. ANDERSON. The land over there was leased by the War Department.

Mr. RUBEY. Where they transferred all this material?

Dr. WHITNEY. Yes, sir; it was under the Government. The War Department bore the expense of moving and setting up the apparatus, and they handled the apparatus.

Mr. RUBEY. What I am trying to get at is this: Is this American University a Government institution?

Dr. WHITNEY. No, sir; this is on the grounds of the American University.

Mr. RUBEY. The Government does not own the ground?

Dr. WHITNEY. No, sir; it is leased. It is under Government control, and this machinery can be brought back to Arlington or sent to Sheffield, or anywhere else you want to send it. Now, under the arrangement we have four or five of our most experienced men working in cooperation with the War Department at the American University Station in the fixation of nitrogen. They are working under a special fund that has been assigned by the Secretary of War for general investigations in connection with the nitrate division of the Bureau of Ordnance. They have furnished us with all the material

we need and with all the shopwork, which amounts to a very large item, because those great steel cylinders have to be bored out, and the mechanical work is very large. They have furnished us with those supplies.

Now, the War Department only has a lease up to the 1st of next July, and what they are going to do after the 1st of next July I do not know. If the Wadsworth bill passes, or if Congress authorizes the continuance of the operation of the Muscle Shoals plant and of the plant at Sheffield, or the Haber plant at Sheffield, the War Department will undoubtedly ask us to assist in putting that great work into operation and in continuing the operations. If that bill does not pass, and, as you all know, there is always a question as to that, then the War Department will probably have to abandon their investigative work.

Mr. MAGEE. If the scheme of the Government is carried out, their idea, as I understand it, is to develop water power there for use instead of steam power.

Dr. WHITNEY. Yes, sir.

Mr. MAGEE. And if Congress should determine upon doing that, as I understand from what the engineers say, it would require several years to complete the construction of the dam and to get the plant into operation under water power.

Dr. WHITNEY. It will take about three years.

Mr. MAGEE. Something like that long.

Dr. WHITNEY. Yes, sir; they estimate three years. They asked for \$10,000,000 this year for work on the dam. Now, in the meantime, they have, of course, as you know, a steam plant that can be used, and that is intended for use at times of slack water in the dam.

Mr. MAGEE. They say that they do not want to use that, because, while it can be used, it is so much more expensive than water power.

Mr. ANDERSON. It will have to be operated at a loss if they operate it under steam power. There is no question about that.

Dr. WHITNEY. Mr. Chairman, I think there is no question at all that if Congress authorizes the operation of the Muscle Shoals plant it would take at least two years to get it into operation.

Mr. MAGEE. Under water power?

Dr. WHITNEY. Yes, sir.

Mr. MAGEE. And probably nearer four years?

Dr. WHITNEY. It would take at least two years before they would turn out ammonium sulphate. Of course that is my personal opinion. It is not an engineering opinion, but I think it would take that long. I do not see how they could do it immediately. Now, as to the Haber process, we are not so much interested in the Muscle Shoals plant, and we are not doing so much work in regard to that, but we are working on the perfection of the method used by the Haber plant at Sheffield. That has never been successfully operated.

Mr. ANDERSON. Is that due to the fact that they have no power?

Dr. WHITNEY. No, sir; that is due to the fact that the method itself has been fully worked out in this country or the apparatus or machinery was put up very hurriedly. This was an immense plant built before we knew as much as we do now about the details. It requires a very high amount of skill to operate that Haber process. It requires a great deal of skill.

Mr. BYRNES. Have you ever found out what process the Germans used after they were cut off from their Chilean supply?

Dr. WHITNEY. Yes, sir; they used the cyanamid and Haber processes for most of their ammonia. The cyanamid process is employed in the Muscle Shoals plant, and there is no experiment about that. That is a well-known process. The Germans also used the Haber process, as I remember it, for the production of about half of their fixed ammonia.

Mr. ANDERSON. Is that the process employed at the Sheffield plant?

Dr. WHITNEY. Yes, sir.

Mr. ANDERSON. Is that the big plant?

Dr. WHITNEY. No, sir.

Mr. ANDERSON. The Muscle Shoals plant is the big plant?

Dr. WHITNEY. Yes, sir; neither the Americans, the English, the French, nor the Italians have yet been able to put up commercial plants for production under the Haber method, because we have not yet understood all of the difficulties. I think the Bureau of Soils has done a great deal of the fundamental work here. Our apparatus is in use now by the War Department, and it has not been essentially changed. The work that we have done on the Haber process justifies the Secretary of War to put one unit of the Sheffield plant into operation. I think that is what he wants to do. He wants to put a small unit, or enough for a semicommercial plant, into operation. He does not intend to operate the whole thing, but he does want to operate a single unit. Now, if those plans go through, I think it is most likely that they will ask us to go with them and help them to install a single unit and to operate it on plans that have been substantially worked out by the Bureau of Soils, the War Department putting it up. Now, in all of these eventualities, if the War Department should be forced to give up their investigative work on the fixation of nitrogen, then the only hope would be for it to come back to the Bureau of Soils in its entirety, and if it comes back to the Bureau of Soils we would probably get the machinery that is now at the American University, a part of which belongs to us, but a large part of which belongs to the Army. They would probably be willing to transfer that back to the Arlington farm and throw onto us the responsibility of continuing the investigative work.

Mr. BYRNES. You say that an extended study of the processes involved would be necessary in order to utilize the plant at Sheffield and the Muscle Shoals plant?

Dr. WHITNEY. Yes, sir; at Sheffield.

Mr. BYRNES. Suppose something should happen to the Muscle Shoals proposition, then it would not be necessary?

Dr. WHITNEY. The investigations should continue.

Mr. BYRNES. They should continue?

Dr. WHITNEY. Yes, sir.

Mr. BYRNES. If it is to be used only in connection with the production from those plants, and if Congress should abandon the Muscle Shoals plant, why should this be continued? Of course, I do not think they should abandon it, but it is possible that they may do so.

Dr. WHITNEY. If Congress should abandon the operation of those plants, which involve millions of dollars, then the Government should continue the investigation of methods, because the fixed-

nitrogen products are absolutely essential to the fertilizers of the future.

Mr. ANDERSON. How many men have you working on your nitrogen proposition now?

Dr. WHITNEY. We have four men of our own, and then we have some assigned by the War Department. I can not tell you how many there are. We figure that in order to be in a position to assume the full responsibility we would require at least \$35,000. Even if we get the Muscle Shoals plant, even if we get the Sheffield plant, or even if we continue with the War Department, we feel that we ought to have a unit which is fully self-supporting.

PROCESSES FOR THE RECOVERY OF PHOSPHORIC ACID.

Dr. WHITNEY. The next item is for the development of processes for the recovery of phosphoric acid. We have gone ahead with that and we have made several runs from a furnace. We have recently published a paper giving as our conclusion the fact that, in our judgment, the use of fuel oil is perfectly satisfactory in distilling phosphoric acid from phosphate rocks. We knew that the electrical furnace was satisfactory but that it was generally too expensive. You may remember that we ran that for a period of six months at Hoboken. We did not have funds enough ourselves and so we got a commercial firm to let us in. We took our equipment up there and ran it for six months to find out the cost of production. With the electric furnace, under the conditions that we had, the phosphoric acid cost us about three-fourths of 1 cent per pound more than it cost by the sulphuric-acid treatment; so that debarred it from general use unless we could get cheaper water power. We figured water power at \$25 per horsepower, which is the fair commercial rate now. By the use of oil fuel we found that we could cheapen the cost of production considerably below the present cost of preparing it with sulphuric acid. The furnace has been demonstrated. We do not need to show that it is possible, but we have not absolutely fixed the cost of production. Furthermore, we have done that work on only one grade of phosphate rock; that is, a hard rock or the export rock. The export miners, depending solely upon the export trade, have been more interested in this than the domestic miners have been, because they see a way of lessening freights to Europe.

Now, I told the committee before that in the mining of rock there is a loss of about 68 per cent of the rock phosphate that is taken out of the mines and thrown on the dump. Now, with this furnace method we can use that waste product. We do not have to use pure forms, as we would do under the sulphuric-acid treatment, but we can use the run of the mine. There is a considerable interest shown in this, and what we are doing now is to determine whether the rocks from other places can be briquetted and be worked as easily as the rock we have been working. Mr. Waggaman is going down into Tennessee to look over the Tennessee fields. That is something the War Department wants to know, because they are vitally interested in this in connection with the Muscle Shoals plant in the preparation of phosphoric acid. For absorbing and fixing the ammonia

at comes off they have either got to use sulphuric acid or phosphoric acid. They have not the phosphoric acid, and it seems as if would be better to use that than the sulphuric acid.

Mr. MAGEE. How about going to South Carolina with that?

Dr. WHITNEY. We will probably go to South Carolina.

Mr. BYRNES. For what?

Dr. WHITNEY. For South Carolina rock.

Mr. BYRNES. For phosphate rock?

Dr. WHITNEY. Yes, sir; that is where we first discovered and used it.

Mr. BYRNES. That has long since been discontinued, has it not?

Dr. WHITNEY. No, sir.

Mr. BYRNES. I think down in the Charleston section they are still mining phosphate.

Dr. WHITNEY. Yes, sir; but the amount is relatively small.

Mr. BYRNES. As I understand it, it is too expensive to mine it, as compared with the Florida beds.

Dr. WHITNEY. Yes, sir. They use the hydraulic method of mining the pebble rock in Florida. We have got to study the conditions in each of those fields—that is, in the pebble-rock field, the hard-rock field, the Tennessee field, and probably in the western fields—but we will confine our work at present to the southern phosphates.

Mr. BYRNES. Most of it comes from Florida now, does it not?

Dr. WHITNEY. Yes, sir.

Mr. BYRNES. From the west coast of Florida?

Dr. WHITNEY. Yes, sir. Florida has a hard-rock district, and that is the closest to Europe. We do not use that in this country at all, practically none. We had to use it during the war, because we could not get anything else. Then the pebble district of Florida supplies the country east of the Allegheny Mountains from Florida to the extreme North. They supply this coast country, and on that account they have a freight differential. They have water transportation. They have complete control of the territory on the Gulf coast and Atlantic coast all the way up to Maine. That phosphate comes from the pebble district. The Tennessee field supplies the territory west of the Allegheny Mountains and north of northern Alabama. Therefore the pebble-rock field supplies about three-fourths of the domestic phosphoric acid that we use. Now, the furnace that we have is as large as we could afford to build. It is subjected to high temperatures, and every time we cool it down cracks develop and the thing largely goes to pieces. That is so with all high-temperature work. A blast furnace when cooled down has to be substantially rebuilt, or the lining has to be. When the acid chambers that we have are cooled down it takes six weeks to get them to operation again. We can not keep this furnace in continuous operation, because it will not stand up. It is too small. It has not the cooling device it should have, but it is very efficient for short runs. After every run we have to spend two or three months in getting it ready for another run. It requires from six weeks to two months anyway. However, we are going to continue to use it in order to get this data as to cost of production.

Mr. ANDERSON. Where is this plant?

Dr. WHITNEY. At the Arlington farm. Now, the next step has got to be to put up a semicommercial plant, and I want to tell you that a plant of that kind that can be kept in continuous operation will cost about \$50,000. It is not likely, however, that the Government will ever do that, but what we are trying to do or hoping to do is, when we get these fundamental costs worked out as well as we can on a small scale, to get some large manufacturers or miners to put up enough money to build a semicommercial plant. If it can be arranged, I want personally to have a hand in that for at least the first year. I want to see it built. I do not want them to go on and build it themselves, because our men have too much information and there are too many risks of making failures to justify me in thinking that an independent concern can put up a plant of this kind and run it. We want to have our hands in it. We want to have control of it; we want to have control of the construction of the plant and its operations, so that we may be sure that the first semicommercial plant is put up in accordance with our plans and with our experience. Now, I think that we can possibly arrange that. Then, when we get that done, the work, or a part of the work, can be dropped by the Government. That is all that remains now to be done—that is, to get this cost information as well as we can with the present furnace, and make a study of our phosphate fields.

Mr. ANDERSON. I do not just see what you want this \$35,000 for if we know the cost. What are you spending on this work now?

Dr. WHITNEY. We have three men, I think. We have three men at work on that. It is being paid for out of the appropriation for the investigation of fertilizer resources. At the time of our run we have to take on an extra force. We get a part of that force from the Arlington farm and wherever we can pick them up. That is very unsatisfactory and very inefficient, because at the time of the run, or when we are running the furnace, we have to have three shifts of men. We ought to have a shift on at 9 o'clock, and they must be with it all the time until 4 o'clock or until 4.30, and then we have another shift to come on. Then we must have men from our different lines of work assembled over there. We have got to pick up men at the Arlington farm, and get men here and there, and during that run we have a force of men who know nothing about it; so that the responsible men have to be there day and night. They have been there for 36 and 48 hours without any rest at all. We have no force, and we really can not do it as it should be done. What I want to do is to provide an efficient force to operate that plant, so that we will not have these long spells when we have to wait to repair it with two men. We ought to have a force of men all the time, so that we can do this work as continuously as we possibly can.

RECOVERY OF POTASH FROM CEMENT PLANTS AND BLAST FURNACES.

Dr. WHITNEY. The next item is potash from cement plants and blast furnaces. We have had two men in the Division of Fertilizer Resources who have been working on this recovery of potash from cement plants for more or less of their time. We have made a survey of the industry. We have determined that from the cement mills we will be able to recover, or the country ought to be able to recover,

about 85,000 tons of potash. We have also been working on the blast furnaces, and so far as we have gone we believe that we can get more potash from the blast furnaces than from the cement mills. There is a possibility that from these two courses there may be obtained about 200,000 tons of K_2O .

Mr. BYRNES. At what cost per ton?

Dr. WHITNEY. That has got to be determined. We do not know that.

Mr. BYRNES. What have you found thus far?

Dr. WHITNEY. Quite a number of cement mills had no precipitators to collect their potash. Those who had produced, perhaps, 20,000 tons of K_2O . During the war they were selling that for \$6 per unit, but now the price has gone down to less than \$2 per unit. At the same time the mills have been rushing to prepare all the Portland cement that they can possibly put out on account of the high price of Portland cement. Now, they have had difficulties in the separation of the potash from the dust, and they have been so busy that they have simply thrown it aside and paid no attention to it. The reason I think that it will be possible to produce it and sell it as a by-product is that the mills have been compelled in many cases to abate the smoke nuisance and dust nuisance. The courts and people generally have demanded that they suppress the dust nuisance.

Mr. BYRNES. That was known last year?

Dr. WHITNEY. Yes, sir.

Mr. BYRNES. What has been done during this past year toward ascertaining whether it is possible to secure potash at a cost that will enable them to sell it commercially?

Dr. WHITNEY. We have not done a thing, or we have done practically nothing. We have not had the funds, and have not been able to do it. The mills did not care anything about the cost, because the price at which they were selling it was so high.

Mr. BYRNES. Selling what?

Dr. WHITNEY. The potash. They did not care about the cost because it was so high during the war. They did not care anything then about economies, because potash was then selling for \$6 per unit. Now it is selling for less than \$2 per unit, and the question of economies has been forced upon them by competition from abroad.

Mr. BYRNES. You do not know to-day what it is costing per ton?

Dr. WHITNEY. No, sir; nobody knows.

Mr. BYRNES. They are continuing to sell it, are they not?

Dr. WHITNEY. Well, I think two of the mills are continuing to sell potash, but the others have just dropped their work.

Mr. ANDERSON. It is evidently costing them too much or they would not drop off.

Dr. WHITNEY. I do not think that inference is justified. The reason they dropped it was that cement raised to such unusual values, \$6 a barrel for cement, and they have been straining every energy to turn out cement.

Mr. BYRNES. But the more cement they turn out the more potash they ought to turn out.

Dr. WHITNEY. Surely; they should have saved their potash that was going to waste, but they simply have abandoned that work because it was too small for them to consider with the prices they

were getting for their cement. The fact that they will have to suppress the dust nuisance indicates to me that as they have to do this they will find means of lowering the cost, because it is a waste product. They have to do essentially what is necessary to prevent the potash from going off in the air, and when they have done that then the question of cost is immaterial. What it wants is some one to follow it up; now is the time to get busy and work out the economical methods of doing it. I think, gentlemen, the country can supply itself with a substantial amount of the potash that it supplies in competition with the European salts.

Mr. BYRNES. You have had two men engaged in this work?

Dr. WHITNEY. Yes, sir.

Mr. BYRNES. And you say you can not make any report as to what they have been doing at all?

Dr. WHITNEY. Surely, I can make a report on what they have been doing. They have been continuing their study of the possibilities—that is, of the amount of potash that was going off in our furnaces, but not the recovery in the blast furnaces. We have another condition. The furnaces have to clean their gases so they can burn them, and they do that by scrubbers; they pass it through scrubbers and remove this dust by water and filters. Now, they find that if they use a Cottrell precipitator, the same thing that is used by the cement mills to precipitate their dust, that they can precipitate the dust out of their flue gases and put them in even better shape to burn in their stoves. So that their own interest should make them adopt methods for the collection of dust and potash material, but they are not particularly interested in it. The average furnace man does not care anything about the potash that goes off; it is a small matter to him. He is after the tonnage of iron and steel, and he is not going to take the trouble to do it; but if we can show him that it is to his interest to get this material out of his way so that he can use his gases to better advantage for the production of iron, we are going to be able to get this material in a form so that it can either be sold as a fertilizer material or sold to some one who can convert it into fertilizer material. As it comes out in the dust, it is fairly good for fertilizer, but the salts obtained from the dust would, of course, be better.

Mr. BYRNES. He is not going to do it unless you can show him he is going to make some money out of it, and then he will do it.

Dr. WHITNEY. Or whether he can benefit himself by getting rid of it: if he can benefit himself by getting rid of it and turning it over to some one who is interested in the potash end of it, then we may be able to get it for use.

Mr. BYRNES. Under this item you are asking for how much?

Dr. WHITNEY. We are asking for \$25,000.

Mr. BYRNES. Do you propose to put more men on this work?

Dr. WHITNEY. Yes; we propose to have a force. We want to actually take this up in the field, to go to the cement mills, to go to the blast furnaces and study conditions right in the furnaces themselves.

EQUIPMENT AND MATERIAL.

Mr. BYRNES. For what purpose do you want \$8,000 for equipment and material?

Dr. WHITNEY. Well, we must have material here.

Mr. BYRNES. I thought you said you were going to send men in the field, to the cement mills and blast furnaces.

Dr. WHITNEY. I am going to send them in the field to study conditions there, but there is a great deal of experimental work that has got to be done here. One of the difficulties and one of the reasons why the cement mills have given up is because they are not getting the recovery that they should. We have found that the potash as it goes off in the dust changes, that as it cools down it changes, and it is no longer soluble potash salt—that is, a portion of it goes off in an insoluble form, and we have developed methods for correcting that.

Mr. BYRNES. What material or equipment have you there now?

Dr. WHITNEY. Well, we just have laboratory equipment, but we want to do this on a larger scale.

Mr. BYRNES. What do you propose to buy? I want to know what you are going to spend \$8,000 for.

Dr. WHITNEY. One of the things we should need would be a large furnace on which we could put pressure and steam in order to treat this dust; it is a matter of treating the dust after it is collected from the precipitater; it is a matter of treating it in order to make it soluble.

Mr. BYRNES. You would not have to have a separate furnace for every one of these three investigations, would you?

Dr. WHITNEY. I surely would. There are none fitted for interchange.

Mr. BYRNES. And you can not make that investigation in the field at the cement mills without having furnaces here which will enable you to continue your research work?

Dr. WHITNEY. We ought to be able to continue our investigations here.

Mr. ANDERSON. If there is nothing further on that, Dr. Whitney, we will take up the next item, which is your soil-map work.

Dr. WHITNEY. May I just say a word? The fertilizer industry is going through a profound change. The materials that have hitherto been used are no longer adequate. The organic ammonias that we have depended on as waste products are being used now more and more for feeding purposes. Of course, right now—that is, on this day—there is a surplus of many materials, but normally there is not.

Mr. ANDERSON. What do you have reference to now?

Dr. WHITNEY. I mean cottonseed meal, animal tankage, garbage tankage, the materials which give us 50 per cent of the materials that we have been using for fertilizers. They are going out of use and these fixed-nitrogen products are coming into use.

Mr. HARRISON. You mean they are going out of use for fertilizer purposes?

Dr. WHITNEY. Yes; because they are more valuable for feeds. Now, we must have an independent source of material for fertilizers. We can not depend on the amount of cotton we raise or the number of animals slaughtered, because we are not going to raise cotton or raise animals just to give us fertilizing materials; so we must have an independent source that we can increase without regard to these crop waste products. That is coming in the form of fixed nitrogen. The world has settled on that and that has been accepted as the necessary

thing. We have got to go on with the study of these fixed nitrogen products because we know very little about them and we have got to use them in connection with our fertilizers. To use these fixed-nitrogen products we have got to change the forms of our combinations; we have got to change our acid phosphates; for example, we are now using a phosphate of lime. The lime is of no value itself, but is just a natural filler; we only get 16 per cent of phosphoric acid in using acid phosphate.

We have got to change that; we have got to combine phosphoric acid with fixed-nitrogen products. Then we have got to take our potash, and instead of using it in the form of potassium sulphate or muriate of potash we have got to concentrate it and combine it with these other materials. You know, the fertilizer industry is a very singular thing. We bring over potash salts and kainit, which have 12 per cent of potash, where we could bring over muriate of potash which has 50 per cent of potash, but the low-grade salt is preferred by many of the mixers for this singular reason: That it has a natural filler in it, and when they want to prepare a low-grade fertilizer they can not use a high-grade material, so that we deliberately pay the freight on a lot of useless material in our kainit and bring over 12 per cent goods, because if we used a more concentrated form we would have to buy a filler and put it in to make up a ton. That is the case with the phosphate-rock mining in Florida and in Tennessee. We have a 68 per cent grade of rock that we use in this country; we have 70, 80, and 85 per cent rock, but our people do not use that; that goes abroad. Why? Because when they use that for making acid phosphate they get so concentrated a product that they have to use a filler, and instead of buying filler here they buy it in Florida or in South Carolina and ship it up to the works. It is a very silly thing to do, but that is the practice, and we are carting around these natural fillers.

Mr. ANDERSON. If you must have them in your fertilizer, you have to get them from somewhere.

Dr. WHITNEY. You must have them if you keep our present formulas, and if you want to put only low-grade fertilizers on the market. But why should you do that? Fertilizers can be made without any natural filler or any filler at all.

Mr. ANDERSON. You are advocating the proposition of making concentrated fertilizers?

Dr. WHITNEY. Yes, sir. With the 2-8-2, which is a very common formula; you can save 83 per cent of the freight.

Mr. BYRNES. Your freight charges eat you up?

Dr. WHITNEY. Yes; and you can save car space. Why do you want to do it? What is the necessity for doing it? It is just a silly practice, that is all, a silly commercial practice.

Mr. BYRNES. What do they say is the reason for it? There must be some reason.

Dr. WHITNEY. They want to continue because they have always been making it this way.

Mr. BYRNES. Is there no other reason?

Dr. WHITNEY. No. I want to see the fertilizer industry put on a real chemical basis, and not depend on old shoes, leather scraps, feathers, and refuse. It is all right to use them if they can be used

in this way, but we have not got enough of those materials. We want to extend the use of fertilizers. We are using in this country, on the average, 40 pounds of commercial fertilizer per acre of land in crops. Now, in Florida they use 300 pounds and in Massachusetts they are using 200 pounds. Now, when we come to increase the distribution in the use of fertilizers we have not got the material.

Mr. ANDERSON. As I get this proposition, there is fertilizer and fertilizer, and when you say 300 pounds of fertilizer that does not mean very much, does it?

Dr. WHITNEY. Yes; it means this: That taking the total tonnage of fertilizer of all kinds used in the State of South Carolina and dividing it by the number of acres that are reported to be in crops for any particular year, you will find that the State of South Carolina is using, on the average, 250 pounds of fertilizer per acre of land in crops. That is all right, and that is a sensible statement.

Mr. ANDERSON. I am not criticizing your statement at all, but what I am trying to get at is this: As I gather from your statement there is a great deal of difference in the value of the fertilizers, depending somewhat on the concentration of the product. If that is true, when you say 300 pounds of fertilizer what do you mean as to the character of the product?

Dr. WHITNEY. Of the fertilizer material?

Mr. ANDERSON. Yes.

Dr. WHITNEY. I mean all that is used, taking everything by and large.

Mr. BYRNES. Including the filler?

Dr. WHITNEY. Yes; that is, the tonnage.

Mr. ANDERSON. Then, that means, of course, that your actual fertilizer is decidedly less than that?

Dr. WHITNEY. Oh, yes. I could give you the number of pounds of nitrogen or ammonia and the number of pounds of phosphoric acid and potash, but I took the total tonnage, because that does not vary very much in different sections of the country. I could give you the others, but it would be proportionately the same.

FOR INVESTIGATION OF SOILS—PREPARATION OF MAPS AND PLATS.

Mr. ANDERSON. Take up the next item.

Dr. WHITNEY. The next item is for the soil survey. Last year the committee reduced the appropriation by \$17,500, and I will tell you why I think that was done. I think the justification for it was because we had that much left over from the preceding year; we did not spend it. We had sent so many of our men to the war, so many men had resigned, and it was difficult to maintain our force, and we were not able to do so. We were trying in every way to get men to come in, and by the time the appropriation became available our field force had been increased to the appropriation, but this force was not sufficient to do the work planned and requested by cooperative agencies. Last year and for a number of years we have asked to have the appropriation increased because of the large amount of work we are doing and especially because of the large amount of cooperative work we are doing.

Mr. BYRNES. I know that the farmers ask for these maps, but I have always wondered as to the practical value of them. You send out maps and reports—and I have read them—and I have wondered whether the reason they wanted them was not the fact that they were maps of the counties more than information as to the soil. It seems to me that unless there is some way of following it up and giving more practical advice to the farmers that the soil survey does not accomplish much good. What have you to say about that?

Dr. WHITNEY. To a certain extent you are right; on the other hand, a soil-survey map shows the character of the soil; it has been used as a basis for buying and selling land; it is stabilizing land values, and the States are following this up by experiments on different types of soil. The experiment stations have come to talk about soils by their names, by the names we give them, the Norfolk sand or the Orangeburg loam. Now, South Carolina has several substations that they have established on these important soil types: North Carolina has been doing it even longer than South Carolina, as well as Pennsylvania, Iowa, and Indiana, and all of the other cooperating States. The States are more and more recognizing the soils as individuals; they know that they respond to different treatments; they know that they require different forms of agriculture and different kinds of cultivation. They are working on fertilizer experiments and they are working on rotation experiments as they pertain to the individual soils. I have compiled the results of the earlier years of fertilizer work in the United States and in not one case has the soil been described so that you could know what they were experimenting on. Now, obviously the Norfolk sand, the Orangeburg loam, Houston soil or Hagerstown soil are different soils; they are different absolutely, and what we want to get now is information pertaining to the Hagerstown loam and the Orangeburg loam in order to determine how those loams respond to fertilizers and how they respond with respect to varieties of crops.

Mr. BYRNES. But you do not do that under this item.

Dr. WHITNEY. Our part is the important part; it is the fundamental part. We are giving this information to the States; they are using it and the department is using it, but it is not our place to carry this to the ultimate end, and it is a question how far we should carry it.

COOPERATION OF STATES.

Mr. RUBEY. With how many States are you cooperating?

Dr. WHITNEY. I have that in my annual report, at the present time 27.

Mr. RUBEY. What proportion of the expense is paid by the States?

Dr. WHITNEY. They are appropriating about \$125,000.

Mr. RUBEY. In what ratio is that to the amount appropriated by the Government? Is it about 50-50?

Dr. WHITNEY. It is a little more than that. Of course, there are some States that have no funds for cooperation. Alabama is cooperating, North Carolina is cooperating, but South Carolina, I am sorry to say, is not cooperating. However, South Carolina is one of the most persistent States for the soil survey that we have; they are after us all the time.

Mr. RUBEY. You do not survey any of the counties in those States that do not cooperate, do you?

Dr. WHITNEY. Yes.

Mr. BYRNES. I doubt the practical value of it if it is not followed up.

Dr. WHITNEY. Well, your State does not doubt the practical value of it.

Mr. BYRNES. I am satisfied the farmers are asking for it, as they ask for many things, and that they believe they are going to receive more practical benefits than they actually do receive.

Mr. HARRISON. The immediate practical value is to the investigator in the State in determining the extent and location of the different soil types.

Mr. BYRNES. But it is of no value unless the local people do follow it up with these investigations.

Dr. WHITNEY. No; I would not say that. It is of great value to the railroads in their development work; it is of great value to the real estate men and to the farmers who are buying and selling land in that it stabilizes values, and it is of value to investment companies. The life insurance companies are——

Mr. BYRNES (interposing). You tell a man that his land is Norfolk sand or Orangeburg loam, but unless you can convey to the average farmer some information that that land is capable of producing some crops other than those which he has discovered by experience his land will produce, how do you help him?

Dr. WHITNEY. That information is filtering down to him all the time.

Mr. RUBEY. Is it not possible to get this information out through the extension work?

Dr. WHITNEY. They are using it all the time.

Mr. BYRNES. I imagine that is the only way it will ever be of any practical benefit; that is, the extension people taking it up and following up your work.

Dr. WHITNEY. Surely; it is fundamental work, and it is like any other fundamental work, other things are building up on it.

FOR EXAMINATION OF SOILS AND CLASSIFICATION OF AGRICULTURAL LANDS.

Mr. ANDERSON. If there is nothing further on this item we will take up item 37 on page 168, "For examination of soils to aid in the classification of agricultural lands in cooperation with other bureaus of the department and other departments of the Government." There is no change in that item?

Dr. WHITNEY. No, sir.

Mr. ANDERSON. What does this item cover?

Mr. HARRISON. That is merely the item which provides for the classification of the lands in the forests in cooperation with the Forest Service.

Dr. WHITNEY. With the Forest Service, the Land Office, the Geological Survey, and other branches of the Department of Agriculture.

FOR COMPLETION, OPERATION, AND MAINTENANCE OF THE KELP PLANT AT
SUMMERLAND, CALIF. 1

Mr. ANDERSON. The next is the kelp item on page 169.

Dr. WHITNEY. We have asked for an increase of \$15,600. I want to say that the work is getting more and more promising, and we are becoming more and more convinced of the commercial feasibility of the work of the kelp plant. We knew that we would have to get other products; that the potash itself would not compete with German potash unless we got other products from the kelp. We are now developing an absorbent charcoal of the highest grade that the world has produced; it is worth \$500 a ton and there is great demand for it. We have also been recovering iodine, potash salts——

Mr. ANDERSON (interposing). That has evidently gone up in price since your last statement?

Dr. WHITNEY. The charcoal?

Mr. ANDERSON. Yes.

Dr. WHITNEY. Well, I do not remember what the other statement was.

Mr. ANDERSON. Last year your statement was \$300 a ton.

Dr. WHITNEY. It is \$500 now, and the demand is increasing; from the chemical industry there is a very great demand. The preparation of that has been exceedingly difficult. We have not made as much progress as we had hoped. The charcoal has to be reheated in an electric furnace, a very ingenious device that was built at the kelp plant; we had to devise the whole thing for our particular work. We have made sufficient of this to send around for factory demonstration; that is, we will get out a ton and we will send a ton to any person who will give it a thorough trial. We send it to the sugar people and the starch people and the chemical industry, and we are using nearly all the products we get out at present for this demonstration work.

In other words, we have not established a market. We could establish a market. We could get everything we can produce taken, but it has been our purpose to distribute the material so as to build up the widest possible market. Now, the investigation on charcoal has not yet been completed to our entire satisfaction; our equipment is not sufficient to handle all the product of the plant. We are sending out a carload of potash every month. We have a contract for that, and that is in the regular line of trade. The next thing is the facility for handling all of this charcoal as it should be handled and establishing a broad market for it. The iodine we are getting out. That is going out every day. We are not yet recovering ammonia. We have not been able to put in the machinery for collecting it, but these by-products will make it possible for us to sell the potash in competition with foreign goods. Now, Mr. Chairman, the same thing comes up in this as comes up in connection with the phosphate industry. We are going to try to put this equipment at Summerland on a commercial basis. It is my wish and my purpose to get that thing to working to such a degree of perfection that we can get bids from a commercial concern before the operation under the Government ceases; so that we can get capital to come in and take it over and go on with the operations. I am very much afraid of let-

this thing get out of our hands, because if we stop the work be- it is taken up or if another company undertakes to build this without the experience we have had, they are very liable to down.

. BYRNES. No company has attempted to build one up to this ?

. WHITNEY. They are waiting for us.

. BYRNES. What do you mean by waiting for you?

. WHITNEY. Waiting for the full results of the investigation.

. BYRNES. That would probably be a matter of years. The is that up to this time you have not developed to such an extent encourage private enterprise to take up this work; is not that it?

. WHITNEY. Yes; we have not.

. BYRNES. The proof of that is the fact they have not done so.

. WHITNEY. They have not done it. We are trying to get them it. Now, you must give us time.

. BYRNES. What do you figure it is costing you per ton to produce potash, allowing a proper price for the charcoal and iodine. you any estimate as to what it is costing you per ton to pro- potash from kelp?

. WHITNEY. No; that is a very difficult thing. We can tell you value of the potash, but to separate out the costs where you have or four products, it is impossible to tell that.

. BYRNES. It would not be fair to say that you have spent on this ation \$192,000 and that the product of the plant amounts to 00?

. WHITNEY. Yes; that is all right.

. BYRNES. It did cost you then, \$192,000 to produce this \$60,000 h of potash?

. WHITNEY. Yes.

. HARRISON. But you must remember, Mr. Byrnes, that this t is still in an experimental stage. We are experimenting with developing new machinery to produce these by-products.

. ANDERSON. And you have a considerable permanent invest- there that ought not to be charged up entirely to one year's ation.

. HARRISON. We may tear out certain apparatus because it does work exactly right and then we have to develop new apparatus to lude the desired results; but, as I understand it, the officer in ge of the plant estimates that the charcoal alone, when the t in running to fully capacity—and it is not in full operation because we have not been able to develop all the necessary hinery—will pay the entire cost of operation.

. ANDERSON. That is what you said last year and I went up and oed the House on that theory.

. WHITNEY. Well, do it again. It is all right.

. ANDERSON. And I confess I think it is a very serious question, is a question at all, as to whether this item ought to be continued. ere is any item here about which there is a real doubt as to its g continued, this is it, and I am not willing to go up and even apt to persuade the House to leave this item in the bill on the of what information we have got now.

Mr. RUBEY. Last year you made the statement in the estimates that "for the fiscal year 1921 it is believed that the receipts will more than cover all expenses, including the heavy overhead now entailed by a large and expensive force of chemists, engineers, and construction and repair men," and you set forth the estimated receipts, and you estimated the receipts for 1921 on the basis of 300 days of operation.

Mr. HARRISON. The price of potash has dropped since then.

Mr. RUBEY. They estimated 150 units of potash per day at \$2 per unit, \$90,000. I do not know what a unit is.

Dr. WHITNEY. Twenty pounds.

Mr. RUBEY. What is it worth a unit now?

Dr. WHITNEY. It is worth now about \$2 a unit.

Mr. RUBEY. That is about the same.

Dr. WHITNEY. He was making a very conservative estimate.

Mr. BYRNES. It is not worth \$2 a unit now, is it?

Dr. WHITNEY. The quotation on the 26th of December on muriate of potash was \$1.85.

Mr. RUBEY. Then you estimated 1 ton of carbon per day at \$300 per ton and 20 pounds of iodine per day at \$4 per pound. What is that worth now?

Dr. WHITNEY. That has not changed materially.

Mr. RUBEY. And 1,600 pounds of sulphate of ammonia per day at \$4 per hundred.

Dr. WHITNEY. You see, we have not been able to get that and we have not got all the carbon, because our experimental work has been developing.

Mr. RUBEY. The total receipts up to August 21, 1920, amounted to \$114,423.04. What is the estimated amount you will receive from this plant for the fiscal year 1921?

Dr. WHITNEY. Here is a statement of that.

PRESENT STATUS OF THE KELP-POTASH PROJECT.

The profits obtainable from the extraction of potash and by-products from kelp have now been demonstrated. Three products have now been commercialized and put on the market. They are:

(1) *Potash salts*.—These are at present being shipped to fertilizer manufacturers in carload lots. They are of 80 per cent purity and are practically the highest grade salts entering the fertilizer industry.

(2) *Iodine*.—No iodine at present is manufactured in America. The world's supply comes from Chile, who holds at present a monopoly of that valuable and essential chemical. Japan alone has been able to achieve independence with respect to that commodity through the development of its kelp-potash industry.

(3) *Bleaching carbon*, "kelpchar," a peculiar form of vegetable charcoal which has the power of removing undesirable coloring matters from various products principally food products, which can not be bleached with chemicals. It removes impurities without adding others. It is in demand by manufacturers of sugars, sirups, organic acids such as lactic (from milk) and citric (from waste lemons and oranges), yeast, oils, glycerin, dye intermediates, and a great variety of organic and inorganic chemicals. Its manufacture in America is a new industry, just undergoing development, an imported carbon now being the main dependence of the American users. "Kelpchar," even in its present stage of development, is decidedly superior to the imported carbon, and is destined to perform a valuable service to a long list of American food and other industries.

Its manufacture is highly profitable. The purpose of this project was to see what by-products would be obtained from kelp and to what extent they could be made to carry the cost of manufacture of the potash. This by-product

promises not only to carry all the operating expenses of a kelp-potash plant but to yield a profit besides.

All three of these products are now imported from foreign countries. Kelp is able to furnish a part of the potash and all of the iodine and bleaching carbon now required by American industries.

The daily value of the kelp products now realized is as follows:

2 tons 80 per cent KCl, at \$115 per ton-----	\$230
20 pounds iodine, at \$4 per pound -----	80
540 pounds bleaching carbon, at about 30 cents per pound-----	160
Total per day -----	470

On this basis annual proceeds for a year of 300 working days will amount to \$141,000. The yield of carbon here considered represents only a fraction of the total capacity of the plant. Effort is now being concentrated on raising this capacity to the theoretical, which only remains to be done when the value of products obtained daily will substantially exceed all operating expenses. At present a considerable part of the output of carbon is being devoted to experimentation in the plants of various prospective customers with the idea of introducing the product and establishing it on the market. While the daily output is being increased, the value of the product is being very greatly improved, so that by the time the full capacity of the plant is reached the market value of the product will be even greater than that estimated. At the same time other products obtainable but not yet commercialized will be put on the production basis and the products placed on the market as soon as time and funds permit.

The progress of the investigation has divided itself into four stages:

1. The determination of the by-products obtainable from kelp.
2. The installation of processes to produce these by-products.
3. The operation of a commercial unit to demonstrate the profits obtainable.
4. The presentation of the results to the interested public in order that they might be persuaded to enter the industry with private capital to develop it to the limit imposed only by the supply of kelp.

The final stage of the work has now been reached, and this organization is actively concerning itself with the task of bringing the proposal to the attention of two groups of the interested public, those who manufacture and sell products similar to those produced here and those who purchase and use them. That one of these will find the proposal sufficiently attractive is inevitable, as it is conceivable that American manufacturers will continue to import materials from abroad which they can obtain at a lower cost and of a better grade in America.

When private enterprise has entered the kelp-potash industry it may be said that this experimental plant has fulfilled its purpose, and it may appear advisable to sell it as a going concern and terminate the work here conducted. Or, instead of terminating the work entirely, it may be desirable to maintain only a research laboratory to assist in the further development of products not yet commercialized which could subsequently be produced by the privately owned enterprises and their profits increased accordingly. This might be after the order of the Citrus By-Products Laboratory. Accordingly, it would be desirable to have authority vested in the Secretary of Agriculture to sell the present installation in whole or in part and under terms as are equitable.

If, on the other hand, private capital fails to make immediate investment in the kelp-potash industry, the only chance of ultimately realizing that end is for the Department of Agriculture to continue its experimental and demonstrational plant here at Summerland until that purpose is accomplished. Here is the living, moving example of what can be accomplished; processes are in operation and costs data on exhibition which show the profits obtainable; working plans are available for the investing public; and expert advice is offered for the use of engineers employed by private enterprise. Every encouragement is offered the competent to enter the field. The facts here established, now being demonstrated daily, constitute the sort of argument in favor of the industry to which private capital in the end must yield. The enterprise and the cause it represents must be kept alive until these aims are realized.

Below is inserted a prospectus showing the value of the products now known to be obtainable from kelp and the profits realizable. These figures are based on the treatment of 100 tons raw kelp per day:

PROSPECTUS.

Potassium chloride, 80 per cent: 3 tons=150 units at \$2 (or 2 tons, 98 per cent, chemical grade, at \$200 per ton, \$400)-----	\$300
Iodine, resublimed: 25 pounds at \$4-----	100
Ammonia, ammonium sulfate, 95 per cent: 400 pounds NH_3 or 1,600 pounds $(\text{NH}_4)_2\text{SO}_4$ at \$4 per hundredweight-----	64
Bleaching carbon, "kelpchar": 1 ton or 2,000 pounds at 30 cents-----	600
Total per day-----	1,064
Per month of 25 days at \$1,064-----	26,600
Per year of 300 days at \$1,064-----	319,200
Operating expenses, including overhead, 300 days at \$600-----	180,000
Gross profits-----	119,200

RÉSUMÉ.

1. The results obtained during the past year are disappointing, but they strengthen the evidence to the effect that substantial profits are to be realized from the extraction of potash and by-products from kelp. The value of the by-products will enable the potash to enter the market, when freight rates are not prohibitive, in successful competition with foreign potash.

2. The net expense to the public has been decreased and soon will be entirely neutralized through sale of products. The enterprise will soon be more than self-sustaining; and it is capable ultimately of returning to the Public Treasury all the money expended thereon.

3. It is our ambition, when the plant is sold, to sell it as a going concern, making a profit, and to sell it on the basis of the profit being made. The price obtainable then will be a great deal more than if it is dismantled and sold as second-hand materials, as will be the case if it is disposed of before the experiments have been brought to a successful conclusion.

4. Permit me to reiterate the statement made a year ago that, since it has been demonstrated that not less than 500,000 tons per annum of raw kelp are available in this vicinity, it is to be assumed that when it is demonstrated what profits are obtainable from the treatment of kelp by the process developed here, plants will be established sufficient in capacity to utilize the raw material available. We may with confidence, therefore, look forward to the establishment ultimately of an industry in this part of the State of California which will yield products obtainable from the above quantity of kelp and of an annual value of over \$5,000,000. This estimate does not take into consideration the equally large industry which may be founded additionally on the kelps of Puget Sound and Alaska. The profit to the public, therefore, from the successful outcome of these experiments seems to be beyond question, and certainly justifies a continuation of the slight net and decreasing expense to the public now being incurred in this work.

Respectfully submitted.

S. W. TURRENTINE,
Scientist in Charge.

DECEMBER 15, 1920.

Mr. RUBEY. Is this made out for the fiscal year 1921?

Dr. WHITNEY. That is for the next fiscal year.

Mr. RUBEY. Then your gross profits for the next fiscal year you estimate will amount to \$119,200?

Dr. WHITNEY. Yes.

Mr. RUBEY. I have been a friend of this project, and I am like Mr. Anderson—if it can be made a success, I am for it; but I want to be shown that it can be made a success.

Dr. WHITNEY. Gov. Rubey, do not forget that this is an experimental plant. It is not a plant in full operation. It is a big project we are investigating, and the results, we think, have demonstrated that it is a commercial possibility.

Mr. RUBEN. I am inclined to agree with you that ultimately it will be a success, but I would like to have that pretty clearly demonstrated before we take it to the House, if we do take it to the House.

Dr. WHITNEY. I would be glad to leave with the committee this memorandum which Dr. Turrentine has just sent me.

Mr. BYRNES. What the committee and the House want to know is whether or not it is a practicable thing to produce potash from kelp at a price that will make it a success commercially, and I understand from you that is dependent upon the production of the by-products.

Dr. WHITNEY. Yes, sir.

Mr. BYRNES. And, therefore, what we want to know is the prospect of the development of by-products that will enable you to sell potash at a price which will compete with the foreign potash.

Dr. WHITNEY. This statement of Dr. Turrentine discusses that very question. We believe it is possible, but do not forget that in an experimental work of this kind we have to develop all our apparatus, that we are working with a very limited appropriation and have to change this big apparatus and install new, and try this method and that method, and there are always expenses connected with it that should not be charged to operating expenses of a commercial character.

Mr. ANDERSON. What basis can you give us upon which we can expect that in the next year we are going to get a commercial demonstration of this proposition? So far as I am concerned, unless we can get a commercial demonstration of it within a year, I am against it from now on.

Dr. WHITNEY. I think we will.

Mr. ANDERSON. I think there is a limit to what we can afford to spend on this sort of work.

Dr. WHITNEY. I think we will, and the kind of demonstration I want to give you is to have one of the big chemical concerns take it over. I think we can do that within the year.

Mr. HARRISON. If the work is discontinued now we will have to dispose of the plant practically as junk and will realize very little from it.

Mr. ANDERSON. That is probably true in any event.

Mr. HARRISON. Of course, we can only point out what we are trying to do and what we believe we can do; that is, make it possible, on the basis of full operation, to show manufacturers and others that a profit can be made out of the plant, and then sell it as a going concern that is making a profit when we are feeling our way into new fields and it is mighty difficult to say definitely that we can do this next year or the year after. The men are working as hard as they can on the proposition, and, of course, it is for Congress to determine whether the work shall go on.

Mr. ANDERSON. I am not criticizing the work that is being done.

Mr. HARRISON. I understand that perfectly, Mr. Anderson.

Mr. ANDERSON. I simply want to get some information as to whether we want to continue it or not.

Dr. WHITNEY. Mr. Anderson, with the kelp plant, with the cement mills, with the blast furnaces, with the alunite which is being developed by Armour, with the sources we know of in this country today, we believe that a substantial potash industry can be developed in this country in competition with German and French potash.

Now, that is a very big field. It is something that has to be worked out. It takes time and it takes money. If that industry can be established in this country so as to make us measurably independent of Germany it will be a great thing for the country, and we think it can be done.

Mr. ANDERSON. At what do you estimate the value of that plant to-day?

Dr. WHITNEY. That would be hard to say.

Mr. HARRISON. Its original cost was about \$100,000. We have changed the machinery around and have scrapped some of it, but I imagine \$150,000 would represent the physical value of what is in it. If, as Dr. Turrentine indicates in his prospectus, we can develop an organization that would yield a profit of over \$100,000 a year on the investment we have in the plant, we ought to be able to sell it for considerably more than that.

Dr. WHITNEY. Yes.

Mr. BYRNES. Unless you can produce potash for \$100 a ton or less you can not hope to do business because the agricultural industry will not stand for a higher price for potash than \$100 a ton. War-time prices permitted them to use potash at a higher price but in normal times they can not pay more than \$100 a ton and use it.

Dr. WHITNEY. The Nebraska lakes have furnished potash at the lakes at \$100 a ton. They sold their product for \$2 a unit.

Mr. BYRNES. That potash, though, has furnished a great field to the lawyers who have been bringing suits all over the country about it, which only shows one of the troubles.

Dr. WHITNEY. No; they have been very successful in disposing of their products.

Mr. BYRNES. The Trona potash?

Dr. WHITNEY. No, sir; the Nebraska lakes. That is the most expensive potash we have been producing. The trouble with the Nebraska potash is that they have sold it at \$2 a unit or \$100 a ton of 50 units, but the cost of bringing it over to the Atlantic seaboard has increased the cost, so that the cost of the Nebraska potash here is \$2.60 a unit. It costs 60 cents a unit to transport it.

Mr. BYRNES. Where is the Trona potash from?

Dr. WHITNEY. Searles Lake, Calif.

Mr. ANDERSON. Apparently your potash production has got to furnish you with very nearly 50 per cent of your receipts, according to these figures of Dr. Turrentine.

Dr. WHITNEY. Not as much as that, is it?

Mr. ANDERSON. That is on the basis of your production now. If you increase your production of charcoal and get the ammonia sulphate, of course, it would be somewhat reduced.

Dr. WHITNEY. We have sold very little charcoal. We have given most of that for factory demonstrations.

Mr. ANDERSON. Of course, this is all theoretical. It is what you could get for it if you did sell it and not what you actually got for it.

Dr. WHITNEY. But those prices are all right.

Mr. ANDERSON. You say "The daily value of the kelp products now realized is as follows: Two tons of 80 per cent KCl at \$1.15 per ton, \$230; 20 pounds of iodine at \$4 a pound, \$80; 540 pounds of bleaching carbon at 30 cents per pound, \$160," which makes a total of \$470

a day. On that basis a little less than 50 per cent of your receipts is represented by potash.

Dr. WHITNEY. That is what is now realized, but if you look at this prospectus and see what will be done when we are in full operation with the charcoal, it is a different thing.

Mr. ANDERSON. Apparently, with the same amount of kelp you expect to increase your production of charcoal from 540 pounds a day to 2,000 pounds a day. I do not know, but that looks rather optimistic.

Dr. WHITNEY. A ton of charcoal out of 100 tons of kelp that we are working over each day is not unreasonable.

GENERAL ADMINISTRATIVE EXPENSES.

Mr. ANDERSON. If there is nothing further on that item, the next item is for general administrative expenses, Item No. 39, and there is no change in that.

Dr. WHITNEY. No.

Mr. ANDERSON. Is there anything else, Doctor, you want to discuss?

Dr. WHITNEY. I think not, sir.

MONDAY, JANUARY 3, 1921.

BUREAU OF ENTOMOLOGY.

**STATEMENTS OF DR. L. O. HOWARD, ENTOMOLOGIST AND CHIEF;
DR. C. L. MARLATT, ENTOMOLOGIST AND ASSISTANT CHIEF;
AND HON. GEORGE HUDDLESTON.**

READJUSTMENT OF AND INCREASES IN SALARIES—ELIMINATION OF LOWER-SALARIED POSITIONS.

Mr. ANDERSON. We will take up your statutory roll first.

Dr. HOWARD. I have a statement prepared here, Mr. Anderson, which is explanatory of the whole thing. Everything is exactly stated here, and perhaps I might submit that.

Mr. ANDERSON. The trouble with this is that it does not indicate the positions as they appear in the Book of Estimates.

Dr. HOWARD. That is what I told them to do. I thought that statement was explanatory of the estimates as they occur in the Book of Estimates in so far as they need explanation.

Mr. ANDERSON. This is practically a copy of the items in the Book of Estimates in which there is any change, but it does not indicate where these items appear.

Dr. HOWARD. Perhaps if you would like to ask any questions, Mr. Chairman, I could explain it. The main difficulty that we find ourselves in is that since these estimates were submitted we have lost eight clerks.

Mr. ANDERSON. How many vacancies have you now?

Dr. HOWARD. We have 12 vacancies now, and we have lost eight clerks since these estimates were submitted. They were in the higher grades, too. Three of them were in the \$1,600 grade.

Mr. ANDERSON. Can you indicate where the vacancies occur, or in what grades?

Dr. HOWARD. Yes, sir; there are three in the \$1,600 grade, or the class 3 grade, and five in the \$1,400, or class 2, grade, and we can not get new clerks to fill those vacancies at the same salaries. We feel that if we could get better salaries we could perhaps get people in from the outside.

Mr. ANDERSON. Are these stenographers?

Dr. HOWARD. Both clerks and stenographers.

Mr. BYRNES. Do you mean to say that you can not get stenographers at \$1,400 plus the bonus?

Dr. HOWARD. No, sir; we can not get them through the Civil Service Commission.

Mr. BYRNES. How is it that other bureaus and departments can get them?

Dr. HOWARD. I do not know.

Mr. BYRNES. Have you asked for them?

Dr. HOWARD. Yes, sir.

Mr. BYRNES. And they have not been able to certify them to you?

Dr. HOWARD. No, sir.

Mr. BYRNES. At what salary did you ask for them?

Dr. HOWARD. At \$1,400 and \$1,600. It has for a long time been impossible to get them at \$1,200.

Mr. ANDERSON. You have accounted for eight vacancies. In what grades do the others occur?

Dr. HOWARD. In the lower grade, at \$1,200. The other four, I believe, are in the \$1,200 grade.

In answer to your question, Mr. Byrnes, I think we can get people certified, but they are not competent to fill these positions. We can get people who have just passed the stenographers' examination to take these positions, but it requires people of experience and ability to fill them. I think, perhaps, that you got a wrong impression from my statement that they could not be filled.

Mr. BYRNES. I did not mean that exactly. The other bureaus state that it is possible to get satisfactory employees of that grade for less than \$1,200, plus the bonus, but your statement is that you can not get people at a salary of \$1,400 with the bonus, which would make \$1,640.

Dr. HOWARD. When we get good stenographers they take them away from us.

Mr. BYRNES. Who takes them away?

Dr. HOWARD. The other departments, and some go to other businesses outside. I do not believe I know of any who have gone outside, though.

Mr. BYRNES. What other businesses outside?

Dr. HOWARD. I do not know of any who have gone into business on the outside, but I am not familiar with the details of this. I know that they have gone from us, and that other departments have taken them away.

Mr. BYRNES. I do not understand that, unless it requires a stenographer of better capacity in your particular bureau.

Dr. HOWARD. No, sir; I would not say that, except that they have to become familiar with our technical matters.

Mr. BYRNES. That is what I had in mind. That would be the only difference that I know of in your bureau.

Dr. HOWARD. A man came to me yesterday and told me that he wanted a transfer to another department at an increase of \$200. He was in our business office.

Mr. BYRNES. What was he getting in your bureau?

Dr. HOWARD. \$1,400. He said that he was going to another office at \$1,600. It was to some branch of the War Department, I think.

Mr. ANDERSON. Apparently all of these changes in your statutory roll are covered by the note under item 26. If you want to stand on that note, we will go to your lump-sum items. There is no change in item No. 27.

Dr. HOWARD. I believe not.

Mr. ANDERSON. We will take up item No. 28.

INSECTS AFFECTING DECIDUOUS FRUITS.

Dr. HOWARD. There is an increase of \$20,000 requested in that item, and the purpose of the increase, I think, is adequately stated in the notes "a" and "b."

Mr. ANDERSON. I think you had better restate that for the record.

PEACH INSECT INVESTIGATIONS.

Dr. HOWARD. The first item of \$10,000 is for investigation of peach insects in the South. During the last two or three years there has been tremendous damage done by the so-called plum curculio, largely in the peach-growing region of Georgia. That damage has been accompanied by a tremendous increase in brown rot, a rot which is favored by the plum curculio, and the ordinary dusting and spraying methods do not seem to control it, as we have been controlling it in the past. On account of two unfavorable seasons following each other, it seems that there is a second brood or generation of the plum curculio developing under these rather abnormal seasonal conditions. What we want to do is to look into that matter, and employ experts and send them down to see if we can get around this excessive damage.

I believe that the Bureau of Plant Industry has asked for a corresponding sum for the investigation of brown rot, which accompanies this plum curculio damage, which is a fungus or bacteriological damage. A cooperative investigation of this damage will be started by the two bureaus. This refers to the damage to peaches in Georgia and to some extent in neighboring States, where peach growing is a large industry.

Mr. ANDERSON. With the very considerable appropriation under this item last year, is it not possible to conduct this additional investigation without an increased appropriation?

Dr. HOWARD. It could be done, but not as satisfactorily. This is a new thing that has been brought about by unusual conditions.

Mr. ANDERSON. This is the item that we increased last year on account of the Japanese beetle.

Dr. HOWARD. Yes, sir. The Japanese beetle, by the way, is getting worse. We have not been able to keep it from spreading slowly in

the Pennsylvania region where it occurs. We have sent two entomologists to Japan, where it originated, to try to find out what keeps it in check over there in the way of natural enemies, but we have not gone far enough with that to report any definite results.

Mr. ANDERSON. Where is this insect damage especially now?

Dr. HOWARD. In the peach-growing region of Georgia. This pest is a native insect of country-wide distribution and attacks plums, peaches, and to some extent pears and apples, but not so greatly. This particular development that I have referred to is a second breed that has occurred only in the important peach-growing region of Georgia, and this has greatly increased the damage.

ARSENICAL SPRAYING PRACTICES.

Mr. ANDERSON. You have an estimate of \$10,000 for investigating arsenical spraying practices.

Dr. HOWARD. That is largely on the Pacific coast. The spraying out there has been objected to on account of the fact that there is an arsenical residue from it when the spraying is conducted in the usual way, and they think that it is dangerous. The idea is to try to improve on the method, and to make extensive investigations of other chemicals and other methods of applying them in order to obviate any residue.

Mr. ANDERSON. As I recall it, one item carried under this particular provision had reference to some wheat beetle.

Dr. HOWARD. No, sir; that was not under this item.

Mr. ANDERSON. I notice in my last year's estimates that I have a notation under this item with respect to the New Jersey wheat weevil.

Dr. HOWARD. Yes, sir; the so-called fly weevil.

Mr. ANDERSON. That is a storage insect?

Dr. HOWARD. Yes, sir.

Mr. ANDERSON. Are you doing anything in regard to that?

Dr. HOWARD. Yes, sir; in cooperation with New Jersey officials this past year.

Mr. ANDERSON. Have you made any progress with that?

Dr. HOWARD. We are about deciding, as we have always thought, that it will be necessary for those people to revise their methods. They will have to alter their agricultural practice in order to thrash earlier. If they can thrash earlier, they will get rid of that trouble. Then it is probable, if they can not thrash earlier, that we can prepare for the fumigation of the wheat in storage.

Mr. ANDERSON. What is your next item?

INSECTS AFFECTING CEREAL AND FORAGE CROPS.

Dr. HOWARD. The next item, No. 29, is in regard to insects affecting cereal and forage crops. There is a request in this item for an additional \$20,000, which is to be divided as explained in the notes. One is simply to meet the increased cost of carrying on the investigation, and the second is for the extension of the investigation to the alfalfa weevil. The alfalfa weevil investigation has reached a point now where it is necessary to do something more. This insect now occupies the region which is shown on this map [indicating]. It

originally made its appearance around Salt Lake City, but it has spread up into these States [indicating], and has been carried probably with alfalfa hay to these points here [indicating].

Mr. ANDERSON. That is, in Nevada, Colorado, Idaho, and Oregon.

ALFALFA-WEEVIL INVESTIGATION.

Dr. HOWARD. Yes, sir. That is a project that we have been spending \$8,500 on, and we want to spend \$10,000 more. We have developed a method of spraying which we want to carry into these new regions. We wish to be able to do some scouting so as to be able to find out more accurately just where this weevil is. Before the war we introduced from Europe a parasite insect, which in some regions cut out probably 50 per cent of them. We were not able to send anybody over there during the war for this purpose, but we know that alfalfa is grown in south Europe, along the Mediterranean, and grown successfully, in spite of this weevil. There is some kind of natural control. Of course, the climate has something to do with it, because we know that this insect is susceptible to a fungus disease in moist climates. We tried to introduce that fungus disease out there, but the climate was too dry. We want to bring in a parasite of the eggs of this beetle from Italy and south France. We were unable to introduce them during the war, and we want to place a man over there to study them. That will be another item of expenditure under that extra \$10,000.

Mr. WASON. I am not familiar with the alfalfa weevil, and I would like to ask you how it operates on a stalk of alfalfa?

Dr. HOWARD. The beetle itself does not do much harm. It is one of the long-snouted beetles that we call a weevil, and its larva eats the leaves.

Mr. WASON. Attacks the stalks and leaves?

Dr. HOWARD. Yes, sir.

Mr. WASON. The effect is similar to that of the grasshopper on hay?

Dr. HOWARD. The effect is very much the same.

Mr. ANDERSON. Is the \$10,000 you are asking for under paragraph "a" of the note just a general increase due to increased costs?

Dr. HOWARD. Yes, sir; that is all. We have not been able to do as much with that sum of money as we were able to do under other conditions.

Mr. ANDERSON. What is your next item?

INSECTS AFFECTING SOUTHERN FIELD CROPS.

COTTON BOLL WEEVIL.

Dr. HOWARD. Item No. 30 is for investigations of insects affecting southern field crops, including insects affecting cotton, tobacco, rice, sugar cane, etc. We have asked for \$50,000 more, to be devoted entirely to work in connection with a new method of dusting the cotton plant with calcium arsenate. The situation, very briefly, is this: That while we have shown in the Mississippi bottoms and in Louisiana, not only on a small scale but on a large plantation scale, that it is possible to use this new process at a saving of approximately \$160 per acre; it does not destroy all the weevils, but it enables them

to grow good crops. That particular method by which we have succeeded in doing that in those particular parts of the cotton belt must be altered under different climatic and soil conditions. These conditions vary, so that we wish to establish five or six field stations in typically different areas of the cotton belt, and by that means to accommodate our process to the conditions as they occur there. We wish to do that so that we will have definite information for every section of the cotton belt.

Mr. ANDERSON. Is this a dry application to the plant?

Dr. HOWARD. Yes, sir; dusting.

Mr. BYRNES. What is the difference in the spraying that would have such a different effect in different regions?

Dr. HOWARD. Do you mean the dusting?

Mr. BYRNES. Yes.

Dr. HOWARD. It is a question of the time it is applied, and of how much to apply at a time. The effect of this dusting is in part dependent upon the moisture. In Mississippi, for instance, the efficacy has depended largely upon the moisture or dew. The dusting is done at night, and the dew holds the dust. The efficacy of this particular arsenical compound consists in getting something that is very fine and minute. The dust is blown out upon the plants when the dew is on, and the weevils coming to feed upon the plants with the morning sun are killed.

Mr. BYRNES. Where you have not much dew, you do not know whether the weevil will be thirsty?

Dr. HOWARD. We want to know how much of the compound to put on under different conditions, or how to apply it where there is not so much dew.

Mr. BYRNES. Have you tried it anywhere else except in Mississippi?

Dr. HOWARD. We have tried it in Mississippi and Louisiana, and planters have tried it all through the cotton belt. Many of them have failed to get good results, and they became disgusted simply because they did not realize the difference in different localities. We have not done enough experimental work to put them right. Then, in addition to that, there is this other complication which is hurting the cotton planters and the reputation of the bureau and everything of that kind, and that is that certain manufacturers of insecticides and spraying machinery are sending their agents through the country making all sorts of extravagant promises and giving all sorts of recommendations, and some of them claim that they have come straight from our office.

Mr. BYRNES. I have frequently noticed warnings that were issued against buying machinery for spraying, and I wondered what the reason was. Your idea is that it is a dangerous thing for a man to fool with unless he has acquired some knowledge of the effects under different climatic conditions?

Dr. HOWARD. He will not get the best results until the whole thing has been studied in those regions by experts.

Mr. ANDERSON. You expect to spend \$75,000 in this weevil work?

Dr. HOWARD. \$50,000. The increase is only \$50,000 in that whole section of work for southern field crops. The whole \$50,000 is to be devoted to this one point.

Mr. ANDERSON. You have spent \$25,000 for this purpose this last year?

Dr. HOWARD. Yes, sir.

Mr. ANDERSON. And you expect to spend \$50,000 more than that next year?

Dr. HOWARD. Yes, sir.

Mr. ANDERSON. Making \$75,000 in all.

Dr. HOWARD. Was there \$25,000 more last year?

Mr. ANDERSON. Yes.

Dr. HOWARD. We expected you to make the \$25,000 immediately available.

Mr. ANDERSON. You asked last year for \$75,000 for this weevil work?

Dr. HOWARD. Yes, sir.

Mr. ANDERSON. And we gave you \$25,000.

Dr. HOWARD. Yes, sir.

Mr. ANDERSON. You are asking for that \$25,000 and \$50,000 more this year, are you not?

Dr. HOWARD. Yes, sir; you are right.

Mr. BYRNES. I heard one farmer say that he had used it, and that as a result he had a pretty good yield of cotton per acre.

Dr. HOWARD. In what region?

Mr. BYRNES. That was in a section that was invaded by the boll weevil only this past year. It is in the western part of South Carolina. He was an exceedingly intelligent man, an unusually intelligent farmer, and I presume he had made some investigation, but he was very enthusiastic about it and said that it was the only hope that a man had to raise cotton there.

Dr. HOWARD. There was a party of prominent planters and State officials, anticipating this invasion, who went to Louisiana to look over this process in its infancy and they talked with Mr. Coad, who has charge of the work there. He must have advised and consulted with Mr. Coad.

Mr. BYRNES. He is the only man that I know of who has tried it on a large scale.

Mr. ANDERSON. If you had \$25,000 to develop this work and get it started and you had gotten the machinery developed, why do you need \$50,000 more?

Dr. HOWARD. Because of the great desire of starting a central point at each one of the five or six different regions where the farmers can come and talk to the men and where we can conduct additional experiments, the amount of variation per acre, and all that; we can not leave that sort of thing to the planters; they will not do it. They are coming now from all parts of the South to our laboratory at Tallulah, La., to get advice.

Mr. BYRNES. That is the only one you have in Louisiana?

Dr. HOWARD. The only one we have at all, but we have been supervising large work in northern Mississippi.

Mr. BYRNES. You do not know that it will work successfully in other sections?

Dr. HOWARD. It certainly will not work perfectly in other sections if they apply it in just the same way that we do in those moist regions or in the prairie regions of Texas. What we have to be able

to do is to give them regional advice. It is going to be the saving of the cotton crop until we get something better.

Mr. BYRNES. You may be able to serve the arsenic in some form that will check it; that is your problem?

Dr. HOWARD. Yes, sir. We by no means despair of getting something better and more efficient and more economical, but we have not found it yet.

Mr. BYRNES. You have not despaired of finding something more economical?

Dr. HOWARD. No, sir.

EXPENSE AND SAVING EFFECTED FOR PLANTERS.

Mr. ANDERSON. How expensive is this operation?

Dr. HOWARD. It costs, I think, about \$5 per acre per application.

Mr. ANDERSON. How many applications are required in the course of the season?

Dr. HOWARD. The number of applications would vary. They are applying four in Louisiana, making the total cost of the operations \$20 an acre. From that they have derived a profit of \$160 an acre.

Mr. ANDERSON. If you only get a third of a bale of cotton to an acre, with 8 cents a pound for it, you are not getting very much for that operation—you better feed it to the boll weevil?

Dr. HOWARD. Of course, there are many regions where they get more than a third of a bale of cotton to the acre.

Mr. BYRNES. The average was brought down. If this thing was successful, the farmers would not hesitate to spend \$5 an acre.

Mr. ANDERSON. Take up the next item, No. 31.

INSECTS AFFECTING FORESTS.

Dr. HOWARD. That is an appropriation which has rested at \$40,000 for a number of years or in that neighborhood.

Mr. ANDERSON. We reduced it \$8,000 last year.

Dr. HOWARD. Yes, sir. We consider it to be a very important branch of the work. The Forest Service is dependent upon us for advice about forest insects, and while we have worked out a good many problems there is room for its extension to very considerably more. Every cent that we put into this purpose will, I am sure, bring good results.

Mr. ANDERSON. Is there any unusual outbreak or epidemic at this time?

Dr. HOWARD. No, sir; nothing at this time.

Mr. ANDERSON. This is just an extension of the work along general lines?

Dr. HOWARD. Yes, sir; in forest entomology.

INSECTS AFFECTING TRUCK CROPS.

Item No. 32 as it formerly read included both insects affecting truck crops and insects affecting stored products. We recommend that it be divided into two different appropriations, one for truck crops only and the other for stored products. It is under that item of stored products that comes the weevil you spoke of in New

Jersey. The increase that is asked for in truck crops is to be devoted entirely to the prevention of the spread of the sweet-potato weevil in the South. We think that we can practically exterminate it if given the opportunity. It is an insect which is apparently not specially difficult to handle if we can get people to do it. We have had the cooperation of the States of Florida, Georgia, and Alabama. Texas and Louisiana have not passed quarantine laws that will help us, but are expected to do so this winter. This insect gets into the stored sweet potato and ruins them and goes into them in the tubers in the ground and burrows them out.

Mr. ANDERSON. Your proposition for investigations under No. 33, separate, for what will you use the increase of \$40,000 which has resulted in this item?

Dr. HOWARD. That is to be used for increasing the force in the field in the effort to eradicate the pest, more or less police work, in addition to investigational work to be done, but it is mostly police work.

Mr. ANDERSON. If you are going to do investigational work under this item, what is the purpose of separating the two items—they are for the same purpose?

Dr. HOWARD. No, sir. The general provision is insects affecting truck crops, including insects affecting the potato, sugar beet, cabbage, onion, tomato, bean, peas, etc.

Mr. ANDERSON. You are asking for \$40,000 increase in this item?

Dr. HOWARD. Yes, sir.

FOR ERADICATION OF SWEET-POTATO WEEVIL.

Mr. ANDERSON. What does that cover?

Dr. HOWARD. That is to be used entirely for the eradication of the sweet-potato weevil.

Mr. ANDERSON. How do you go about its eradication?

Dr. HOWARD. It feeds upon a few wild plants, and the extermination of those plants is one thing. Another thing is to enforce regulations to the effect that sweet-potato growers will not get their tubers and slips from which they grow the plants from regions which are infested, and infested potatoes must be destroyed in a country covered by the weevil already. This is a movement which has received the indorsement of the departments of agriculture in the States affected.

COOPERATION OF STATES.

Mr. BYRNES. Do the States cooperate?

Dr. HOWARD. Yes; Florida especially used a considerable amount of money.

Mr. ANDERSON. How much money has been spent?

Dr. HOWARD. I think Florida spent \$20,000.

Mr. BYRNES. How much did the other States contribute?

Dr. HOWARD. Insignificant sums, but they placed their State officials at our disposal. They have not made direct appropriations of their own.

Mr. ANDERSON. Do you expect the States to contribute next year?

Dr. HOWARD. I so hope. You can not tell what a State will do, Mr. Anderson.

Mr. ANDERSON. As a general thing, unless it is a question of preventing a spread of the bug, it would seem to me that the best indication of the value of the work is the extent to which the States are willing to cooperate?

Dr. HOWARD. They have all cooperated in the way of passing laws about the introduction of the stock from which the plants grow, the slips or draws from other States, and they have also established quarantines which they are supporting against the regions which are infested.

Mr. BYRNES. I notice that Texas and Louisiana did not cooperate, according to this statement?

Dr. HOWARD. Not for the first two years, sir.

Mr. BYRNES. Those two States, according to your note, are more seriously infested than any other States?

Dr. HOWARD. Yes, sir. The other States are quarantined against Texas and Louisiana for that reason, and they will probably pass laws at the coming sessions. We have stayed out of these States largely because they have not exhibited proper interest, but they are going to pass laws and we hope to be in a position to help them.

Mr. BYRNES. Is this sweet-potato weevil pretty general in that territory?

Dr. HOWARD. Only in a few States along the Gulf of Mexico; a rather limited distribution. I am sorry I have not a map with me. It extends on a narrow line from Galveston along the Gulf Coast to and including Florida.

Mr. ANDERSON. Is there anything indicating that it has spread recently?

Dr. HOWARD. Not since we began our work. It had been spreading slowly in Texas and Louisiana. We have been able to exterminate it almost in Florida, and we have been reducing the infested area in both Georgia and Alabama.

Mr. ANDERSON. If you are reducing the area, why do you need more money?

Dr. HOWARD. In order to hurry the work and get rid of it as soon as possible. There is very important work to be done in Texas and Louisiana where we have not done any work.

Mr. ANDERSON. I am in sympathy with hurrying the work, getting through with it, but when I look over this program of work and find that we are still working on bugs where the inquiry was begun in 1889 or thereabout, I am not very much encouraged in hurrying it.

Dr. HOWARD. Insects are very hard creatures to get ahead of. Dame Nature seems to be more interested in increasing the insect family than the human family.

Mr. ANDERSON. I did not mean to speak in a critical way at all.

Dr. HOWARD. No; I understand.

INSECTS AFFECTING STORED GRAIN, CEREALS, ETC.

Mr. ANDERSON. Please take up the next item, No. 33.

Dr. HOWARD. That is the item that we propose to separate from the old arrangement, which included insects affecting stored products. That seems to be a very natural division. We only put it in under the other head because the man in charge of truck crops happened to have an interest in stored products, grain particularly. We

have, however, made a new section in the bureau and put an expert in charge of it, and we have rather modestly asked for \$10,000 more for the purposes indicated under paragraphs "a" and "b." The question of the intensive investigation of insects affecting dried fruits becomes of considerable importance at this time on account of the tremendous development in the dehydrating of fruits and vegetables of all kinds. Many are very enthusiastic over it, and it seems that this process will be very important in increasing the food of the Nation. The minute you dry vegetables or fruit they become subject to attacks by another different class of insects. This increase is in relation to these insects.

Mr. RUBEY. You say that you used to carry item No. 33 in the preceding item, No. 32?

Dr. HOWARD. Yes, sir; No. 32.

Mr. RUBEY. There is nothing in item No. 32 which calls for grain as a cereal?

Dr. HOWARD. Stored products, as you see; that included everything.

Mr. RUBEY. Does this item No. 33 deal with stored products?

Dr. HOWARD. Yes, sir.

Mr. RUBEY. With grading?

Dr. HOWARD. Not at all. The second paragraph under which \$4,500 is requested is for investigation of warehouses and warehouse conditions in regard to insects damaging all sorts of things in the warehouses. The Warehousemen's Association is very much at a loss to know what to do with such an enormous insect damage to products stored in their warehouses. It is for a special investigation of this insect problem that we have asked this money. If a man, for example, who understands insects goes into a warehouse and looks around and sees what insects are there, a very simple beginning would be to suggest to the warehouseman some different arrangement of the material that he has stored which would prevent undoubtedly a considerable amount of damage, but that must be a man who understands the insects.

Mr. RUBEY. I do not want to encourage you to ask for more, but I do not see how you can do much with \$4,500?

Dr. HOWARD. Not so very much; no, sir.

Mr. BYRNES. What do you really hope to do with \$4,500?

Dr. HOWARD. We will get into relation with a number of big establishments and see just what we can do in the way of advising them. It will require two or three more men and their traveling expenses.

Mr. BYRNES. \$4,500 would not give you more than about two men?

Dr. HOWARD. Perhaps.

Mr. BYRNES. With their compensation and traveling expenses.

Dr. HOWARD. You see, the thing is a new problem and we want to feel it out before we ask for more money. There would be the actual expenses. The experiments and all that would be undertaken by the warehouseman themselves under our advice. There would be little money needed for experimentation. We must make the study to give them the advice.

Mr. ANDERSON. The total increase in both items is \$50,000?

Dr. HOWARD. Yes, sir; \$40,000 and \$10,000, \$50,000.

BEE CULTURE.

Mr. ANDERSON. Please take up item No. 34.

Dr. HOWARD. There is an increase of \$5,000 in the bee culture investigation, which would be devoted entirely to the study of the honey supply, the nectar supply. The honey plants must be studied at the time of blooming. This has been done to a certain extent, but Dr. Phillips, in charge of this work, wants to make an exact study of the sources of the nectar and how to build up the colony so as to take the best advantage of the nectar supply. I do not myself know very much about beekeeping, but it seems to me a very reasonable request.

INSECTS AFFECTING CITRUS AND OTHER TROPICAL FRUITS.

Mr. ANDERSON. Please take up the next item.

Dr. HOWARD. This, Mr. Chairman, is an increase of \$15,000 for investigations of insects affecting citrus and other tropical and subtropical fruits—quite a number of small items—and if you will permit Mr. Marlatt, who is the chairman of the Federal Horticultural Board, who will appear before you later, this division also has charge of this kind of work in the Bureau of Entomology, you can ask any questions necessary about that allotment.

Mr. ANDERSON. Mr. Marlatt is present now.

Dr. HOWARD. I did not know that.

Mr. MARLATT. Mr. Chairman, you recall that last year three different items, somewhat related, were merged into one item. We had had for a good many years an appropriation for insects affecting subtropical fruits, a specific appropriation for the investigation of the Mediterranean fruit fly and for the enforcement of a quarantine of the Hawaiian Islands to protect the United States mainland from the entry of this pest, and a small appropriation, started two years ago, on account of the camphor thrip. These three items were all brought together last year in one general appropriation. The total amount was reduced by two or three thousand dollars. We urged last year that these items should be increased. In point of fact, these items represent rather an oasis in the history of the department. They are items covering work of very great importance, for which no increased appropriation has been asked for 12 years. We had made the most economical use of the money possible and had extended the work to the limit, but had gotten to the stage where an increase was absolutely necessary. We made such request last year and received a rather unsatisfactory response from Congress in the amalgamation of the three items and a reduction of the total amount.

The requests for this year are practically a duplication of those of last year, and I hope the committee will remember that these appropriations have not been increased for some 12 years. The reason for this increase is indicated in the notes "a," "b," and "c."

INVESTIGATIONS IN CALIFORNIA AND FLORIDA.

Note (a) is \$3,000 for citrus-fruit insect investigations in California. The old appropriation for all citrus work was something like \$16,500, with which we have been doing work in California, Florida,

and Louisiana, wherever there was any citrus work to be done. That \$16,500 had to be divided between three or four different States. The work in California is the most important. It has relation to the big citrus district of the United States, and included also the other subtropical fruits of California. We are asking for an increase of \$3,000 to enable us to carry out the work which is now in progress. There has been a lot of good work accomplished there. The fumigation of citrus orchards is becoming a standardized practice. A new system of disinfection of the trees was brought into use two or three years ago and is now being standardized. That is disinfection by the use of what we call liquid hydrocyanic-acid gas. The old process was to generate the gas in crocks under the trees and the dry gas coming out floated up throughout the tented trees. Under the new process the gas is generated and condensed at plants for the purpose after the fashion in which liquid air is produced. This liquefied gas is sprayed on the ground under the tented trees and rapidly volatilized. The standardizing of this method is still in progress.

Another important item is the control of the citrus mealy bugs. These are white louse like insects, very harmful to citrus trees and other plants. Even gassing is not efficient in the case of these insects. The control of one of these mealy bugs has been worked out fairly well. In the comparatively small area infested by this insect effective control has been accomplished, and the citrus growers of this area are for the first time in years being able to sell their fruit as high grade. The small quantity they have hitherto produced has been necessarily sold as seconds and thirds. The appreciation of the department's work in that particular instance is very keen and enthusiastic. I think you can appreciate that a field as large as the citrus industry of California requires constant work and investigation. The work of the department in that field is on the same basis as that of the technical experts who are maintained as continuing factors in connection with most large manufacturing enterprises. We have not been able to expand this work to meet urgent needs, and the inadequate salaries paid has led to the loss of some very valuable men. One man in particular who was engaged as the leader in that work in California has been taken over by an independent citrus agency in California at a salary two or three times greater than he was getting from the department.

The small increase of \$1,800, described under note (b), is for a similar work which is being done in Florida. The study of citrus insects in Florida has been conducted on an expenditure of about \$5,000 a year. The citrus industry in Florida has greatly developed, and has been greatly benefited by this work of the Agricultural Department, and this increase is much needed to carry that work forward.

Mr. ANDERSON. What are you expending for this work in California?

Dr. MARLATT. I have not the figures here, but it all comes out of the \$16,500 appropriation that I mentioned for the citrus work. It probably amounts to seven or eight thousand dollars.

INSECTS AFFECTING THE AVOCADO, GUAVA, ETC.

The third note (c) has relation to the station at Miami, Fla. At Miami there is developing a very large avocado industry. This is a new fruit industry for this country, and one destined to expand enormously.

Mr. RUBEY. What is that fruit?

Dr. MARLATT. It is the alligator pear, a very valuable salad fruit. It differs from many other fruits in possessing a large actual food value. It is now very expensive, but we hope that it will soon be so abundantly produced that you or I can afford to buy it.

Mr. BYRNES. Do you know how much is charged for them?

Dr. MARLATT. They are often retailed for as much as a dollar apiece. There is an avocado pear tree in a suburb of Los Angeles that has an interesting history. A man bought a house and lot out in this suburb and this tree was on it at the time. I saw the tree one year ago. It is about 30 feet high, and has a sort of lattice house built over and around it, and it is insured for \$20,000. The purchaser of this small house was unfamiliar with the fruit, but later discovered that he had unwittingly purchased something of a gold mine, and the fruit from the tree, I was told, gives him a net revenue of about \$5,000 a year.

The avocado industry is growing in Florida. The climate along the coast near Miami is peculiarly adapted to it. Large orchards are being planted and a good many of them are in bearing. In response to the earnest demands of avocado growers, the department undertook a few years ago an investigation of the insect enemies of the avocado tree. This project covers also the insect enemies of other subtropical fruits of that region, notably, the mango and the papaya. We have very limited funds with which to undertake this work, and it has gone along in a rather precarious way for two years. A lot of very useful work has, however, been accomplished. The young man in field charge of the work has published half a dozen preliminary bulletins and reports for the benefit of the growers, giving them the information which he has obtained. He is just in the midst of that work, and he should have a competent assistant and funds for reasonable expansion. The request for \$3,000 is made for that purpose.

INSECTS AFFECTING PLANTS IN GREENHOUSES.

The next item (d) is also a \$3,000 item, and is for work for which we have had no specific appropriation hitherto. That is for the investigation of greenhouse cultures. We have started work in that field in response to urgent demands from florists, ornamental-plant growers and growers of economic plants under glass. We started that work by diverting, from time to time, men from related work. I understand that somebody has introduced a bill in Congress to appropriate \$25,000 for an investigation of insects attacking such cultures. We are starting this work in a very small way, but the field is a very large one. If you look into the value of plants grown under glass you will find that it will correspond to the value of some of our more important farm crops. The capital invested in such

rests is tremendous. It is one of the big industries of the country, and one that as to insect study and control has had practically nothing done for it by the department until the last year. The work we have already done has been of such value that it has led to this demand for more adequate covering of the field.

Mr. ANDERSON. I understand there is some new bug that attacks rose bushes, which has done a great deal of damage, both here and in Canada.

Mr. MARLETT. It is probably not a new bug, but an old one that has taken on a new habit.

Mr. ANDERSON. It is a sort of midge?

Mr. MARLATT. There are a good many insects that attack roses in greenhouses. What I had in mind and what I supposed you had in mind is the strawberry beetle, which seems to have taken on a new habit and is doing great damage to roses grown under glass. There are also various midges in greenhouses as the chrysanthemum midge and the rose midge.

Mr. ANDERSON. This insect I referred to attacks rose bushes, I am sure.

Mr. MARLATT. This strawberry beetle began to attract notice as a pest in 1919, and that may be what you have in mind.

The department, I believe, stands ready to indorse the application which may be made for a much larger appropriation. Our item for insect work should not be taken as indicating at all what the department feels should be done in this field, but merely its recognition of the economic status resulting from the heavy indebtedness at the present moment. There is no doubt but what there is opportunity to expend \$25,000 in that field with enormous returns to the country as a whole.

INSECTS AFFECTING FRUIT IN THE CANAL ZONE.

The last item (e) is in relation to work which we have undertaken in the Canal Zone. There has been no specific appropriation for insect work, but it is work which could be carried on properly out of the old fruit-fly appropriation, inasmuch as this work in the Canal Zone has had to do in large part with fruit flies. A station was established in the Canal Zone about two years ago, and a number of very important subjects have been studied. One of these is the black fly, which attacks citrus and other fruits. This pest does not now occur in the United States, but is well established in the Canal Zone and also occurs in Cuba and in half a dozen places in the islands and countries north and southeast of us.

A hearing was held at the department a couple of weeks ago preliminary to the establishment of quarantine restrictions on the export of fruit from that part of the world because of this fly. The United States and other fruitgrowers of the South are very much afraid that the black fly will get into this country through the agency of imported fruits and do the same mischief here that it is now doing in Cuba and other places. We hope to be able to prevent the entry of this fly without putting any embargo on fruits. A fruit embargo would cause great losses to the people in that part of the world. It is proposed by regulation to see that the fruit from those countries

comes in clean packages and is free from leafage, because the insects are carried on the leaves and not on the fruit. Disinfection will be given where it is necessary, and the cars crossing from Cuba will be required to be free from such leafage. By these and other means we hope to control the risk without putting any serious embargo on the fruit and vegetable trade from these countries to the south of us, in the prosperity of which we are much interested.

Our principal opportunity to study this pest is at our station in the Canal Zone. We recently lost the man—a well-trained expert—who was in charge of this work. He could not support his family on his salary and accepted a better job in this country, where he did not have the disadvantage of living several thousand miles away from his friends and relatives.

Mr. RUBEN. Where is that station located?

Dr. MARLATT. Near Ancon, Balboa Heights. It is conducted in cooperation with the Canal Zone authorities, making use of their grounds and station. We do not have to pay any rentals, and the cost is limited to the salaries of our own men and very small expense authorizations. We were unable to replace the man we lost for a considerable period, and the work was without a leader for several months. We have recently secured a man formerly employed by the Canal Zone authorities as their entomologist in charge of the canal farm—in other words, a plantation for the production of the fruit and vegetables for the people in the canal service. He is a well-trained man who has lived long enough in the Canal Zone to become thoroughly acclimated. He is willing to stay, and we are mighty fortunate to have such a man. He has as an assistant a Panamanian, who seems to be thoroughly efficient. This is a very important substation, because of its geographical position at an important crossroads of the world, where many new pests may gain lodgment. These men not only do investigational work but, in cooperation with the Federal horticultural board, they inspect where possible and as may seem necessary the stuff that goes through the canal. They have stopped a number of undesirable things that might have come to this continent.

A place like that, where ships come from all parts of the earth, especially from the tropical parts of the earth, is a dangerous place, and it is of the greatest importance that we have it under observation all the time. We are fortunate to have a well trained man in charge of that work who is willing to stay there. Living is very expensive there, and it is not an ideal place to keep one's family. But that work should certainly be maintained and the ships and their cargoes which come to the Canal Zone from tropical and subtropical countries should be very carefully inspected.

Mr. ANDERSON. Is this stuff that goes through the canal all inspected?

Dr. MARLATT. So far as possible everything that brings an important risk is inspected. It is not practicable very often to inspect through cargoes. Any such cargoes coming to our ports are inspected at such ports in this country. But there is a great deal of stuff that comes to the Canal Zone and stays there. The black fly is an illustration of what may and has happened. Such a pest, once it gains a foothold in this zone, may very easily be carried from there to the

mainland. There are also a number of other fruit flies in this region which we don't want to come any closer to us.

I would like, Mr. Chairman, with your permission, to suggest an amendment of the preliminary wording of item No. 35, on page 182, which I have been discussing. When the three related items were brought together last year and consolidated, some very essential words were left out. Under the old item, on account of the Mediterranean fruit fly, the principal idea back of the appropriation was quarantine and control work, but the words "quarantine and control" were entirely left out, in the consolidation, so that as the item now reads we have only the implied authority from the old wording for the guarantor work we are actually doing under the appropriation.

Mr. BYRNES. What language do you suggest?

Dr. MARLATT. I would like to replace the language, substantially as it was before. I will read the item as it is suggested that it be amended:

For investigations of insects affecting citrus and other tropical and subtropical plants, and for investigation and control of the Mediterranean and other fruit flies in cooperation with the Federal Horticultural Board.

And then the references as now given on page 182 down to the amount of \$66,500. I have substituted the word "plants" for the word "fruits," and have not included the camphor thrip, which is not a fruit pest. That substitution makes the item cover such necessary studies as that of the camphor thrips. The insertion of the words "and control" will take care of the quarantine work and the certification of export fruit from Hawaii. We are certifying all the fruits that leave the Hawaiian Islands for the United States, pineapples, and bananas, and three or four other fruits and fruit products. That is all done under this appropriation by the board in cooperation with the Bureau of Entomology. But during the last year we have been doing it as noted only with implied authority.

Mr. ANDERSON. Dr. Howard, what is your next item?

INVESTIGATION AND CLASSIFICATION OF MISCELLANEOUS INSECTS, ETC.

Dr. HOWARD. The next item is item 36, "For the investigation and classification of miscellaneous insects, and for the study and investigation of insects that carry disease," for which we are asking \$84,330. You will notice that there is a change of wording asked for, leaving out the words "investigations" and "identification" and the word "systematic," and also the words "including the study of insects affecting the health of man and domestic animals, household insects, and the importation and exchange of useful insects," and the insertion of the words at the beginning of the item, "The investigation," and at the end of the item the insertion of the words "and for the study and investigation of insects that carry disease." There is an increase of \$32,000 recommended for this item. That is explained in the notes (a), (b), and (c). Note (a) may not impress you as being a very important thing, but it is of basic importance to our work. That is the employment of experts for the classification of insects. That item was cut down \$10,000 last year and it has worked to our disadvantage. We employ a number of specialists in connection

with different groups of insects. Insects are so enormous in number and so varied in kind that a man must devote his life to one particular group before he understands them thoroughly, and it is necessary to have these experts, because we have got to know exactly everything that is connected with them.

When a new pest comes up we want to know what it is. It is referred to one of these experts, and he is able to place it exactly in its proper classification. He is able to give us references to its geographical distribution and all that sort of thing. It is of very basic importance not only to our work but also to the work of the States. The State people are constantly sending these specimens to us for examination by these experts. So we have several men employed who are paid out of this fund, and whose authority is absolute concerning the identity of any particular pest. That appropriation was cut \$10,000 last year, and we have been hampered to some extent in our work, and some of our experts have had to go on an indefinite leave of absence. We are very anxious to strengthen that force, and that is why we are asking for the return of that \$10,000.

Mr. ANDERSON. That simply restores the item to last year's amount?

INVESTIGATION OF SCREW WORM AND OX WARBLE.

Dr. HOWARD. Yes. The next item, which amounts to \$17,000, is for the extension of our work in connection with insects that affect domestic animals. We have been doing a moderate amount of work on that line. We have been carrying on some important investigations as to the occurrence of flies in food-packing establishments, to prevent the contamination of food supplies, and we have investigated the mite and lice pests of poultry. But now there seems to be a necessity for the investigation of the screw worm, and especially in the Southwest, where it has done enormous damage to the hides of cattle. One of our best men has hit upon two or three lines of investigation which he thinks should be followed, and for that reason we have asked for \$17,000 for specific investigations.

Then the heel fly or the ox warble is a widely distributed pest of cattle, occurring over the entire country. The adult fly lays its eggs upon the heel of the animal. The small larva which hatches from the egg bores through the skin just above the heel and works its way into the skin up to the back, where it forms the familiar lumps known as warbles or wolves. It is especially troublesome to dairy cattle, its attacks resulting in weakened vitality and decreased milk secretion. In order to conduct the necessary experiments to develop successful control measures, additional funds are necessary.

MOSQUITO INVESTIGATIONS.

The other item, amounting to \$5,000, is to complete our various investigations of mosquitoes, particularly malarial mosquitoes under plantation conditions in the South.

Mr. ANDERSON. How much are you spending on the screw-worm work?

Dr. HOWARD. We have been spending possibly not more than \$2,000. It has taken part of the time of one assistant.

The mosquito work has been explained to the Committee on Agriculture. That is a study of conditions on a large plantation in the South in order to find, first, the economic bearing of the malarial mosquito on plantation conditions and to see how much it would cost to get rid of it, simply from the entomological point of view. We have accumulated an enormous mass of material and we wish to have some extra money to employ two or three more men to finish this work and to report upon it.

Mr. ANDERSON. You expect that this work will continue how long?

Dr. HOWARD. I doubt if it continues two years more. It is work in which the health authorities in the States, and also the men who are conducting plantations on a large scale are greatly interested, and it is work which we can carry on much better than anybody else, because of our entomological knowledge.

GENERAL ADMINISTRATIVE EXPENSES.

In the next item, No. 37, "For general administrative expenses connected with above lines of investigation, and for miscellaneous expenses incident thereto," there is no increase asked for.

GYPSY AND BROWN-TAIL MOTHS.

For item No. 38, which is, "To enable the Secretary of Agriculture to meet the emergency caused by the continued spread of the gypsy and brown-tail moths by conducting such experiments as may be necessary to determine the best methods of controlling these insects," there is a very considerable increase recommended. The appropriation which we had been having of \$302,650, was cut down by the last Congress to \$250,000, and the result has been that we have been unable to do the police work required by the threatened spread of the insect along the border in New England. Then, toward the close of the fiscal year there was a sudden discovery that this insect had made its appearance in three or four entirely outside localities. One was in New Jersey, one was in New York, and there were two or three smaller colonies elsewhere. These were not the result of the spread of the insect from New England, but they were the result of the introduction of European trees before the passage of the plant quarantine law in 1912, and to the unnoticed presence on these trees of eggs of the gypsy moth, so there have been in New Jersey and in two or three other localities small colonies of the gypsy moth which have been constantly spreading. The one in New Jersey has reached a large size at the present time, and we have been compelled to neglect our New England work to go in and do work on the outside colonies, because they threatened to spread to the western part of the country, and so we spent much of our reduced appropriation toward the close of the fiscal year.

As the result of the inability to do work along the western line of the New England spread of the insect there has been a marked movement there which we have been able to prevent very largely. We need, in an effort to exterminate this big colony in New Jersey and the smaller colony in New York and two or three smaller colonies on Long Island, a large sum of money, and we have asked for an appro-

priation of \$600,000 for this item instead of \$250,000, which was appropriated for the item last year. The States concerned are very much exercised. New Jersey has appropriated over \$100,000, and there is a bill now before the New York State Legislature providing for an appropriation of \$50,000 for the extermination of the smaller colonies. These States will work in perfect harmony with us. We will allow our experts, who have been working on these insects for years, to go in and take charge of the campaign, and it seems probable that we can wipe out all these colonies if we go at it energetically.

In the meantime, unfortunately, there have been sent out from this New Jersey place large numbers of trees to different parts of the country, and there is a fear that through these trees coming from this infested New Jersey locality there will be an introduction of this pest in other parts of the country. We want to trace every one of those shipments of trees in order to find out whether the insect has succeeded in establishing itself in the localities to which the trees are shipped. This appropriation will be spent in the extermination of these colonies and in the tracing of these shipments to see if we can find further infesting colonies of these insects.

Mr. ANDERSON. What is the method of combating this insect?

Dr. HOWARD. It is combated, first, by the treating of the egg clusters in the wintertime. The egg clusters are more or less conspicuous on the trunks of the trees, and we treat them with creosote. Then after the insects hatch, early in May, we conduct very extensive spraying. We throw a solid sheet of liquid which breaks into a spray. In that way we destroy the young caterpillars soon after hatching. Those are the principal methods that we use for that purpose.

Mr. ANDERSON. This item apparently has been in the bill since 1912.

Dr. HOWARD. Yes.

Mr. ANDERSON. I was wondering, in view of that fact, what reason there was to expect the extermination of this insect. Have you made any progress in that direction?

Dr. HOWARD. Yes; we have absolutely prevented its spread over the United States. That appropriation has acted like a police measure to protect the whole country from the spread of this insect. We have, in certain directions, restricted it and stopped its spread and made the infested region smaller than it was before. In New England the States, as a rule, have taken care of the insect inside and kept it down. We have been fighting along the border to prevent the spread beyond the border and in an effort to make the total area smaller. The New England States have been cooperating and have done very well. For instance, last year Maine appropriated \$30,000; New Hampshire, \$12,500; Massachusetts, \$250,000; Rhode Island, \$15,000; and Connecticut, \$35,000.

Mr. RUBEY. What is the total amount of those appropriations?

Dr. HOWARD. Those appropriations total \$342,500. It should be said that in addition to the State appropriation of \$250,000 in Massachusetts, the towns and cities have made independent appropriations, and there have been large personal expenditures by large proprietors. It is estimated that \$600,000 was spent last year in the State of Massachusetts alone.

Mr. ANDERSON. Do these moths attack all sorts of forest trees?

Dr. HOWARD. They have attacked all forest trees, but they have attacked the oak, the ash, and the maple more than the coniferous trees.

Mr. ANDERSON. Do they destroy the tree altogether?

Dr. HOWARD. They kill it. They not only feed upon practically every kind of forest tree, but where they occur in numbers and where there are adjoining cultures of strawberries and vegetables they will eat those. Two years ago I saw a large strawberry plantation on Cape Cod destroyed by them. Then they get into the cranberry bogs on Cape Cod and destroy those, too.

Mr. ANDERSON. I was wondering on what you base this estimate of \$600,000. I notice in your tabulated statement, on page 187, you have an estimate of \$228,342 for miscellaneous items. That is rather a large item to be accounted for in that way.

Dr. HOWARD. That is very largely composed of supplies, if I am not mistaken, in the buying of spraying machines and of insecticides. It takes an enormous amount of arsenate of lead to do the spraying.

EQUIPMENT AND MATERIAL—TRAVELING EXPENSES.

Mr. ANDERSON. You have an increase of nearly \$70,000 for equipment and material, and you have an increase of \$55,000 for traveling expenses.

Dr. HOWARD. We have to do an enormous amount of traveling to follow up the shipments of trees in order to find other places that have been infested down to the present time. You spoke of the extermination idea. We have, in previous years, exterminated several colonies that have been found in this way. There was one in Ohio which by rigorous methods we succeeded in absolutely exterminating. There was another in the Hudson River Valley, just above New York City, in very difficult territory, which we absolutely exterminated. It was through those two kinds of experience that we have been led to believe that we can exterminate this New Jersey colony which covers about 100 square miles. In the large territory in New England, which covers about 10,000 square miles, the best we can do is to hold them in check, because we do not believe we can exterminate them.

ACTIVITIES IN NEW ENGLAND.

Mr. WASON. Are you reducing the affected area in New England?

Dr. HOWARD. From year to year we will draw the line in at one point or another. It is very difficult. Take, for instance, a densely wooded region. When you consider that the insect spreads through the carrying of newly hatched caterpillars with the wind, you have got to watch every hill, otherwise in the warm days in May the caterpillar will spin out and the silk will float it through the air and it will land possibly 10 or 15 miles away.

Mr. WASON. Does the spraying work in New England include the spraying on private property?

Dr. HOWARD. Yes; we are privileged to enter every place.

Mr. WASON. And do you collect a fee from the owner if he will allow you to do the spraying?

Dr. HOWARD. Not at all; we do not collect any fee from him at all. If his place is a menace to the surrounding country, he can be compelled to do the spraying himself, under the State law, but it takes time to enforce the law. The amount of money expended by the Federal Government is not sufficient to do the work as thoroughly as it should be done, and therefore we have an arrangement with the State people so that they work in the interior and we work along the border.

Mr. WASON. Let me see if I understand you. When you began this work you went over the highways and sprayed the highways, did you not?

Dr. HOWARD. Yes.

Mr. WASON. And without any particular plan in view—it was a promiscuous arrangement?

Dr. HOWARD. We had very definite plans in view, because we thought that the principal means of the spreading of the insect was by their dropping on automobiles and carts and upon persons, and they could be very easily carried in that way, and it was very essential in order to prevent the spreading to be sure that the roadside trees were cleared of the caterpillars. We have discovered since that time that that was not the principal method of spread, but that the wind spread of the very young caterpillars was the principal method.

Mr. WASON. I suppose ordinarily the highway line along which you sprayed was in the region of the greatest timber growth, and if that happened to be on the west side of the highway and there were several miles of that wooded growth, they would keep going from tree to tree?

Dr. HOWARD. That is true. That shows where the trouble was with the old method.

Mr. WASON. When did your bureau discover that that was an erroneous conception of the method of spreading?

Dr. HOWARD. It is not erroneous, because they do spread to some extent in the old way, but that is not the most important way.

Mr. WASON. Let us say the less comprehensive and effective method.

Dr. HOWARD. We became thoroughly sure of it I think about five years ago. I am not quite sure of the date.

Mr. WASON. Do you think you changed your method of procedure five years ago?

Dr. HOWARD. Very soon after that, I think. You may know of some instance in which it was not done. Do you recall seeing any such spraying in recent years?

Mr. WASON. Yes.

Dr. HOWARD. I think there has been some done.

Mr. WASON. You tried to spray within half a mile of my farm within the last year and a half.

Dr. HOWARD. Was that done by the State or by us?

Mr. WASON. The words "United States Department of Agriculture" were on the machine.

Mr. ANDERSON. How many of these spraying machines have you now?

Dr. HOWARD. I am not sure of the number; I can find out and put that in the record.

NOTE.—Six horse-drawn machines and 14 power sprayers.

Mr. WASON. I would like to know the number of machines you have operating in New England.

Mr. RUBEY. Why do they call the insect the gypsy moth?

Dr. HOWARD. It is a very old English name. We adopted it from the Europeans.

Mr. WASON. You answered a question of mine a few moments ago, as I understood you, by saying that your employees—that is, your field men—did not attempt to work in cooperation with the owner of the land and did not attempt to make the owner of the land contribute anything for cleaning his land. Is that so?

Dr. HOWARD. That is true. We ask nothing from the owner except permission to spray where it seems necessary to protect the country beyond.

Mr. WASON. Are you sure of that? Do you have charge of your field men in New England?

Dr. HOWARD. A man under me, Mr. Burgess, has direct charge of that.

Mr. ANDERSON. Are these spraying operations carried on during a particular part of the year?

Dr. HOWARD. Yes; they are carried on in May and June.

Mr. ANDERSON. They are carried on by a temporary force?

Dr. HOWARD. Yes; a large force of men are employed. A great many of those men, however, are also employed in scouting work during other portions of the year.

Mr. ANDERSON. In conducting these spraying operations, do you undertake to spray a whole territory completely?

Dr. HOWARD. Yes; but it would be only certain spots in the territory that are dangerous from the viewpoint of possible spreading. In a hilly region we spray the hill itself because the spread is from that. We do less spraying in other regions where the hills are not so high. You will find that the gypsy moths since the very early days spread regularly through a forest. There will be spots which will be completely deforested and you can see them from a distance on the hillside. Those regions are sprayed very thoroughly, indeed. Does that answer your question?

Mr. ANDERSON. I wanted to find out whether you attack a certain area and go in there and spray everything, or whether you have a spraying system by which you spray parts of a forest and do not spray other parts.

Dr. HOWARD. That is the case; we spray parts, but do not spray other parts. We have a tremendous line running from Long Island Sound way round up into Maine. We could not spray the forests throughout that region. There are certain spots from which the insect will spread. We know those points and we can go there and spot them from some distance.

Mr. ANDERSON. You spray these sections where you have found infestation and where you have reason to believe the insect exists?

Dr. HOWARD. Yes, sir; that is right.

Mr. WASON. When they have destroyed a forest or a portion of a forest, will they exist in that territory, or do they move to adjoining territory?

Dr. HOWARD. Those that attempt to stay there will die off. The insect itself, that is, the moth does not fly, because it has a very heavy

body and it can only spread either by chance carriage on vehicles or by the flight of the caterpillars. If you have an isolated forest completely deforested the great majority of these insects die out. There is nothing left for them to feed upon. If the tree leaves and the undergrowth does not come out next year there is nothing for them to feed upon. Then, too, they die of disease when they are crowded together. Then we have also imported a number of parasites from Europe which kill off the insects.

Mr. WASON. I expect they are cutting five or six hundred cords of oak on my timber land which these moths have killed. Will they attack the young sprouts that come up next spring where this timber has been cut off?

Dr. HOWARD. If there are plenty of egg masses there they will attack the young sprouts in the spring.

Mr. WASON. Will the eggs hatch on a dead tree?

Dr. HOWARD. Yes.

Mr. WASON. Then if this timber is split into cord wood and is not thrown on the market they will hatch in the spring and attack the young sprouts that come up, and it will be a continuous process?

Dr. HOWARD. Yes.

Mr. RUBEY. If you haul your cordwood somewhere else, it is liable to spread from that.

Dr. HOWARD. You can not haul it out of an infested district, because there is a quarantine against it.

Mr. RUBEY. Does that only apply to the State line?

Dr. HOWARD. The line is drawn and the quarantine is established every year on that line, that forest products can not go beyond without inspection and certification. They can not take it over into another part of the State across that line.

Mr. WASON. That has to be by State regulation?

Dr. HOWARD. Yes; that is by State regulation. All the States have their own regulations.

OBJECTS OF EXPENDITURES.

Mr. ANDERSON. Can you give the committee an idea of what this estimate of \$600,000 is based on, the number of men, the number of machines, etc.?

Dr. HOWARD. I do not know. It seems to me to be an appropriately reasonable estimate, when you consider the amount of work to be done.

Mr. ANDERSON. I do not know whether it is reasonable or not, because I do not know what you are figuring on.

Dr. HOWARD. It is based, of course, on the number of men and the number of machines and the amount of poison that is used.

Mr. ANDERSON. A man can not say because there is an infestation in New Jersey or another in Pennsylvania that it will take \$600,000 or \$1,000,000.

Dr. HOWARD. Yes; he can if he figures out the number of men and the number of machines.

Mr. ANDERSON. That is what I am trying to find out.

Dr. HOWARD. The man in charge of that work, Mr. Burgess, has been in charge of it for a number of years. He is a very cautious,

a very clear-headed man, and a good business man, and he has made those estimates undoubtedly with extreme care.

Mr. ANDERSON. He may have done so, but he certainly does not indicate it in this tabulated statement, because your statement shows an increase of \$16,000 in salaries, an increase of \$13,000 in wages, and an increase of \$55,000 in traveling expenses, which is out of all proportion. You are also asking for an increase of \$69,000 for equipment and material, and you are asking for an appropriation of \$228,000 for miscellaneous items, which is an increase of nearly \$200,000, and which evidently is a case of the same sort.

Mr. RUBEY. You are asking for an increase of \$200,000 for miscellaneous items alone?

Dr. HOWARD. I will get the detailed estimates and insert them in the record.

(The estimate referred to above follows:)

	Estimated 1922.
Salaries-----	\$98, 198. 00
Wages-----	312, 460. 00
Other objects of expenditure:	
Stationery-----	1, 000. 00
Traveling expenses-----	85, 000. 00
Equipment and material-----	75, 000. 00
Miscellaneous items-----	28, 342. 00
Total-----	600, 000. 00

NOTE.—The item referred to in the discussion as \$228,342 for miscellaneous items was a clerical error; \$200,000 of this amount should have been added to the item of \$112,000 for wages, as indicated in the revised table above.

EUROPEAN CORN BORER.

Mr. ANDERSON. The next item is No. 39, in reference to the European corn borer, which is transferred from the miscellaneous section of the bill?

Dr. HOWARD. Yes, sir.

Mr. ANDERSON. Without an increase in the amount asked for?

Dr. HOWARD. There is no increase asked for, but there is a request that \$250,000 of the appropriation shall be made immediately available. The corn borer has been found in two new locations since last year.

It made its appearance in western New York and across the border in Canada. It is now found at the old original localities here [indicating on map].

Mr. ANDERSON. That is, in eastern New England, New Hampshire?

Dr. HOWARD. Yes; and also in the Mohawk Valley, where it was found last year, but it has been discovered also around Buffalo and in Ontario. Of course being here [indicating], these localities are more threatening than there [indicating]. This locality is more threatening here [indicating].

Mr. RUBEY. So that the record will show, you had better state just where you mean.

Dr. HOWARD. That is, in the Mohawk Valley, and also in eastern New England.

Mr. ANDERSON. When you say it is in hand what do you mean?

Dr. HOWARD. We have prevented it from spreading, and we have reduced the area somewhat, but in the vicinity of Buffalo we have

been obliged to spend all our funds in that region, and we want something available for our next year—some appropriation available for next year.

Mr. RUBEY. What are they doing in Canada?

Dr. HOWARD. The Canadian people are very much excited. They had a conference up there on the subject, and I think they will make an appropriation immediately.

Mr. RUBEY. When did you say they had that conference?

Dr. HOWARD. In October.

Mr. RUBEY. You say they have not acted?

Dr. HOWARD. Not as far as I have heard. They are, of course, a menace to us as well as to their own territory.

Mr. ANDERSON. Are we maintaining any quarantine against the importation of the insects from Canada?

Dr. HOWARD. Yes; Mr. Marlatt will discuss that quarantine, as well as the quarantine in the South, in his testimony, which will follow mine.

Mr. ANDERSON. Just what is being done to control the insect?

Dr. HOWARD. There are several things we are doing. We are first studying in each place just what the insect is affecting. In New England it is affecting 75 different plants. In eastern New York it has not as many food plants. We have to find out what it affects before we can do anything whatever. Then we are burning up the waste places around the corn fields and burning up the stubble and teaching the farmers what they must do.

The CHAIRMAN. You say you are burning them up; how are you doing that?

USE OF FLAME THROWERS.

Dr. HOWARD. We are using flame throwers with success. We are also pulling the stubble up and putting it into a pressure machine and in that way killing the insects. The most important work that we are doing, however, is trying to find out definitely just where it is and just what it is feeding on.

Mr. RUBEY. You have had a year in which to do that. Well, not that long either, but you ought to get that pretty well in hand as soon as possible, because while you are doing that the corn borer will be getting in its work.

Dr. HOWARD. That is true. It has not spread from many of these places since it was first introduced. That is, since we first found out that it was introduced through broom corn that was shipped into this country. And we have found that it spread in Ontario from the broom corn factories; that is, it was in the broom corn shipped in from Europe. We are trying to trace all those shipments and find out through our own men, or through local men, where the insect has become established.

Mr. ANDERSON. Do you find these flame-throwing devices effective in destroying it?

Dr. HOWARD. Oh, yes; they destroy it.

Mr. ANDERSON. The railroads have been using a flame thrower in my country for years, and they say it does not work and does not destroy the weeds at all.

Dr. HOWARD. It destroys the caterpillar that works in the stems.

Mr. RUBEY. What do you mean by a flame thrower?

Dr. HOWARD. It is a pressure apparatus that throws out a flaming creosote or other material which makes a quick flame and throws out sufficient heat to destroy the caterpillars. They are using the Army flame-throwers, by the way, I may say, in Southern France, to destroy the grasshoppers. There were last summer great numbers of grasshoppers in southern France, and they are using flame throwers successfully. There is a curious fact connected with that. All the poultry in that particular region was feeding on the grasshoppers with avidity, and after using the flame throwers they found that the chickens and ducks were much fonder of roasted grasshoppers than they were of the raw grasshoppers.

Mr. RUBEY. It might be well to establish a camp up there and put the soldiers to work.

Dr. HOWARD. Yes.

Mr. WASON. Doctor, when was this map prepared?

Dr. HOWARD. Very recently.

CORN BORER IN MAINE.

Mr. WASON. Maine is the place I was speaking of.

Dr. HOWARD. That is New England [indicating on the map]. The green portion represents the territory scouted and where the borer was not found. The blue is the region of finding it, and the scarlet portion is where it was last year.

Mr. WASON. Now, right up here [indicating on the map], have you discovered any corn borer in there?

Dr. HOWARD. No, sir.

Mr. WASON. Well, it is there.

Dr. HOWARD. Are you sure?

Mr. WASON. I was in there in the campaign in Maine, and there was consternation there. That is in the vicinity of Fryeburg.

Dr. HOWARD. Our scouting line came to here [indicating]. You see, this is not scouted in solid blocks, but along lines. That is to say, we had gone to all the points where stuff had been sent, sweet corn and that sort of thing—to the summer hotels and resorts which abound in that region.

Mr. BYRNES. It is possible that there are some places you have not discovered?

Dr. HOWARD. Oh, surely.

Mr. WASON. These farmers were very much disturbed.

Dr. HOWARD. Was it identified by some competent man?

Mr. WASON. They claimed it was. This was when they were drawing their sweet corn to the canneries in August.

INCREASE IN TRAVELING EXPENSES.

Mr. ANDERSON. I note in your tabulated statement in the Book of Estimates, Doctor, you show an estimated increase in traveling expenses from \$30,000 to \$160,000.

Dr. HOWARD. That means there must be ever so much more traveling by the scouts in their efforts to find these things. And traveling expenses are greater than they were last year.

Mr. ANDERSON. That is an increase of 500 per cent.

Dr. HOWARD. I hope we will be able to do twice as much work as last year in the way of scouting.

Mr. ANDERSON. You should do five times as much.

Mr. RUBEX. There is one decrease. You have a decrease in the material desired.

Dr. HOWARD. Yes; because we have bought it.

Mr. RUBEX. And you have a decrease in a miscellaneous item.

Dr. HOWARD. We look upon this corn-borer work and the gypsy-moth work as emergency work that must not be stopped. We have got to keep on with this work and stop the insects if possible. Other work can go on from year to year, and we are not as keen about it as we are about these things that threaten great immediate damage.

Mr. RUBEX. What cooperation are you getting, if any, from the States of Massachusetts and New York?

COOPERATION OF THE STATES.

Dr. HOWARD. New York appropriated \$100,000 last year, and is to appropriate \$50,000 this year. The \$100,000 spent last year undoubtedly greatly helped the situation in the Mohawk Valley. They appropriated that as an emergency appropriation before our appropriation went into effect. I am not sure, but I do not think the New England States have made any appropriations as yet. Some of them had appropriations which may be diverted to work of this kind. Vermont had a general appropriation of some thousands of dollars from which they have taken \$3,000 for the gypsy-moth work for last year.

Mr. WASON. Our legislature meets next week. It is biennial. We appropriated \$12,000, and it had not as yet got into New Hampshire. Now it has got in and has been found in three spots, right along the Massachusetts State line, and near the seacoast, and the only other place I know of is what was reported, as I told you, near Ryeburg. I suppose our legislature will appropriate something.

Mr. RUBEX. My recollection is that Massachusetts was to make an appropriation to cooperate in this work.

Mr. WASON. She has appropriated \$250,000 altogether.

Dr. HOWARD. It did appropriate a large sum two years ago.

Mr. RUBEX. Then they carried out their word?

Mr. WASON. Yes. I spoke of New Hampshire. It had not then got in the State, but it was an appropriation to hold it at the Massachusetts border. That is where we would like to keep it.

MEXICAN BEAN BEETLE IN ALABAMA.

Mr. ANDERSON. I think we had better have this letter with reference to the supplemental estimate read into the record.

(The letter referred to follows:)

DECEMBER 23, 1920.

The honorable the SECRETARY OF THE TREASURY.

SIR: I have the honor to submit herewith an estimate of the additional appropriation required by the Bureau of Entomology to meet the emergency caused by the outbreak of the Mexican bean beetle in the vicinity of Birmingham, Ala. The outbreak was first reported to the department August 8, 1920, and has since been the subject of investigation by members of the bureau scientific staff. For this item the following wording is suggested:

to enable the Secretary of Agriculture to meet the emergency caused by recent introduction and rapid multiplication of the Mexican bean beetle in the State of Alabama and to provide means for the control and prevention of the spread of this insect in that State and to other States, in cooperation with the State of Alabama and other States concerned and with individuals affected, including the employment of persons and means in the city of Washington and here, and all other necessary expenses, \$150,000, which shall be immediately available."

Since the submission of the estimates for the annual appropriations of the Department of Agriculture, experts of the Bureau of Entomology have investigated the situation existing as a result of the introduction of the Mexican bean beetle into Alabama. The results of the preliminary investigation have shown convincingly that we are threatened with an insect pest of the first magnitude and have strongly emphasized the necessity for additional funds in order that the spread of this destructive pest may be restricted and that a thorough investigation for the development of practical control measures may be undertaken. It is estimated that at least \$130,000 of this supplemental appropriation will be needed for the enforcement of quarantine and control measures in cooperation with the State of Alabama and other States concerned, and that \$20,000 will be needed for the investigation of life history and habits of the beetle in this altogether new environment and for conducting such experiments as may be necessary to determine the best methods of control, including the introduction and establishment of parasites and other natural enemies.

The funds now available for truck-crop insect investigations are inadequate for the important projects for which they were appropriated, and it is not possible to divert from these purposes funds which will be adequate to cope with this new problem which has such serious consequences to the agriculture of the South, as indicated in the following brief discussion of this pest:

The Mexican bean beetle feeds, both as adult and larva, on the foliage of lima, kidney, and shell beans and on cowpea and soy bean. Although this beetle is capable of accomplishing complete destruction of the bean crop wherever beans can be grown in the United States, the gravest danger incident to its introduction lies in the destruction which it is capable of accomplishing to the cowpea crop of the South, of the most fundamental importance to that region as a basic crop of diversified agriculture, for without the cowpea the most intensive utilization of the greater portion of the southern agricultural lands cannot be secured.

In the vicinity of Birmingham, Ala., the bean beetle has completely destroyed cowpea crops previously mentioned during the present year. In its occurrence in Colorado and New Mexico it acts practically to prohibit the profitable growth of cowpeas. Two generations a year are produced in Colorado, and indications point to a third and possibly a fourth brood in Alabama. Judging by the rapid multiplication and complete destruction shown in that State and the known hardiness of the insect in the West, where it successfully withstands temperatures many degrees below zero Fahrenheit, it is capable of surviving practically all climatic conditions which it may encounter.

The Mexican bean beetle is believed to have been introduced into Alabama through alfalfa hay received at Birmingham in carload lots from Colorado in 1919.

Since that time it has extended its range northeastward nearly to the Virginia line, and now is distributed over nearly 5,000 square miles of territory. On this basis it is spreading much more rapidly than did the Colorado potato beetle on its first outbreak, and from present indications it bids fair to become a much more serious menace to agriculture than either the boll weevil or the Colorado potato beetle.

Respectfully,

E. T. MEREDITH, *Secretary*.

Mr. HOWARD. Mr. Chairman, that tells the whole story. As I said, I have not been down there myself, but Mr. Marlatt, who is not only assistant chief of the Bureau of Entomology, but also chairman of the Federal Horticultural Board, did go down, and if there are any questions to ask about this he will be glad to tell you about it.

Mr. ANDERSON. We will be glad to have Mr. Marlatt tell us what he has discovered.

STATEMENT OF MR. C. L. MARLATT, ENTOMOLOGIST AND ASSISTANT CHIEF OF THE BUREAU OF ENTOMOLOGY AND CHAIRMAN OF THE FEDERAL HORTICULTURAL BOARD, DEPARTMENT OF AGRICULTURE, ACCOMPANIED BY DR. KELLERMAN, ASSOCIATE CHIEF OF THE BUREAU OF PLANT INDUSTRY AND A MEMBER OF THE BOARD.

MEXICAN BEAN BEETLE.

Mr. MARLATT. I went to Birmingham at the earnest request of the authorities of Alabama and surrounding States to supplement the hearings which we had held in Washington on the subject of the Mexican bean beetle. This hearing was held for the purpose of possibly taking quarantine action.

Mr. RUBEY. When was that hearing held?

Mr. MARLATT. This fall, in October. The board was anxious to get first-hand information on the insect. The tales of the destruction were so startling that even the board was rather skeptical on the matter. The board realizes that such things often look a good deal larger at first than they do after one gets a proper angle of vision from the outside. We were met at Birmingham by the entomologists and quarantine authorities of a half dozen surrounding States. We went out into the fields and saw the insect and its work. I have never seen more complete destruction by an insect than this insect had caused in that general district.

The growing of green beans for the local market in Birmingham is a very considerable industry and these beans had been almost absolutely cut down to the ground. There was not a green shred left and this condition seemed to be general in that district. Like all other new invasions, it thinned out toward the edges but in this case the invasion had been carried nearly across the State, along the main line of transportation, following the main railroad until within a mile or two of the Georgia line. We not only ourselves saw the work of the insects but we had the testimony of the Italians and the other growers as to what had happened to them during the year. We saw also the work of the insect on the cowpeas. From the evidence of this year the great importance of this pest can not be questioned.

As a result of this situation the surrounding States were preparing to quarantine against Alabama to protect themselves from invasion. There was also a demand for a Federal quarantine, to make more effective such State quarantines.

Mr. BYRNES. What did you determine about the quarantine?

Mr. MARLATT. In the absence of any funds to meet the cost of inspection and certification such as we have in the case of gypsy moth, there is only one quarantine we can issue, and that is an embargo, and that is not very effective.

The State of Alabama attempted to get an appropriation of \$250,000. It failed of passing by one vote. It requires a two-thirds vote of the legislature. The vote of the legislature shows that the State as a whole is alive to the needs for such appropriation, and the State authorities are going to give full support to the State quarantine already promulgated, and ultimately the State, I have no doubt, will come forward with funds.

Mr. RUBEY. When does the legislature meet again?

Mr. MARLATT. That I can not answer.

Mr. HUDDLESTON. This session was a special session and that is the reason it required a two-thirds vote. The next regular session is a year from now.

Mr. MARLATT. The reason that the Mexican bean beetle has aroused so much concern in Alabama and the surrounding States is that it not only destroys a very valuable food crop, but it also has the possibility of destroying the chief fertilizer crop of the South.

We do not know whether this is a sporadic outbreak; it may increase or it may decrease with future years. We do not know the extent of the invasion, because there has been no fund adequate for surveys. Control has not been worked out. There is sound basis for the request of Alabama and surrounding States that there shall be a Federal quarantine to hold it in check as much as possible until control methods are developed. It should be made possible to establish a regulated quarantine providing for movement of the restricted articles under inspection and certification. That is the reason for the major part of the fund requested. You will notice that we are asking for \$130,000 for the quarantine. That will come under the Federal Horticultural Board in cooperation with the Bureau of Entomology. It will avoid the necessity of an embargo, which is not very effective any way when it can be enforced only by the cooperation of common carriers. We can notify them not to move certain articles out of certain territories, and they possibly will comply if they know what is in the package, but quite often they do not know what is in the package and prohibited goods are shipped out.

There is, in my judgment, urgent need for this appropriation. It need not be looked upon as a continuing appropriation. In a year we will know whether the insect is possible of such control or not.

Mr. ANDERSON. This insect, I understand, came from Colorado?

Mr. MARLATT. Yes, sir; supposedly in a shipment of hay.

Mr. ANDERSON. Is not its life history and its habits known; have you made any study of it out there?

Mr. MARLATT. The life history and habits of the insect have been studied by the State authorities of Colorado, and perhaps to a slight extent in New Mexico. It has been recognized as an important pest there, and the bean crop has been very materially affected.

Mr. ANDERSON. How does the insect spread?

Mr. MARLATT. As an adult beetle in any farm product, almost. It is now in an entirely new district. Colorado is a mountainous country and has a short summer and a long winter. It is now in the South, where its life habits will be entirely different, and it will have more broods. The control methods will probably have to be entirely different. Methods which are applicable in irrigated lands would probably not apply in the South.

Mr. RUBEY. Does it work on anything but the beans?

Mr. MARLATT. Beans and related plants, such as cowpeas—leguminous plants.

Mr. ANDERSON. What is its history in Mexico?

Mr. MARLATT. It is an insect which has been known for a half century or more. It is a western insect. It has been known in Colorado, and in that Rocky Mountain region for this period as an enemy of the bean. Until this occasion it has never occurred outside this

mountain strip from Colorado south. So far as I know, it was in Colorado when the country there was settled. It undoubtedly came up from Mexico, as most other horny things did, following the last glacial period. As we now know, the boll weevil is indigenous in Arizona. It is true that it did come up to us from Mexico through Brownsville.

This bean beetle, in the same way, may have been isolated in the mountains of Arizona, New Mexico, and Colorado all these years, and only somewhat recently, we do not know just when, made its appearance in Alabama. It may also have reached other States. Next year it may be found in a half dozen Southern States. If so all quarantine will go by the board, but until we know such facts, we are justified in attempting to hold it where it now is, until we can find out how to control it and determine the facts as to distribution.

Mr. ANDERSON. This does not involve any campaign for the eradication of the insect?

Mr. MARLATT. I do not believe it is now possible to eradicate it. Anyone who has been in that broken, mountainous country of northern Alabama and seen the distribution of the insect must necessarily concede such impossibility.

Mr. ANDERSON. I am asking about this particular appropriation.

Mr. MARLATT. This fund is not being requested for a program of extermination.

Mr. ANDERSON. It is largely for controlled by quarantine?

Mr. MARLATT. Largely for controlled by quarantine, and for a study of methods of local or farm control.

Mr. BYRNES. When did it make its appearance in Alabama?

Mr. MARLATT. It was discovered last year, some time in the summer, I believe.

Mr. BYRNES. It has spread very rapidly, then?

Mr. MARLATT. Not necessarily rapidly. It was discovered and the spread, already largely accomplished, was determined. Like many other new pests, it probably had developed slowly, and had arrived last summer at a point where it could suddenly become very destructive. I do not recall how much was known of it before last year. I think possibly something was known of it by the farmers, but it first came to the attention of the State experts last year.

Mr. BYRNES. Your idea would be that it is more destructive in the South than in Colorado?

Mr. MARLATT. Apparently more destructive. It has, I am advised, been very destructive in Colorado, so much so that the bean crop is often ruined or much injured by it; but it could not be more destructive than it has been in Alabama, where the crop has been actually wiped out. And the fact that it is there in a climate where the broods will be more numerous makes the possibility of destruction much greater.

Mr. HUDDLESTON. I would like to say a few words if I may, Mr. Chairman.

Mr. ANDERSON. We will be glad to hear you.

STATEMENT OF HON. GEORGE HUDDLESTON, A REPRESENTATIVE FROM ALABAMA.

Mr. HUDDLESTON. It is practically impossible to exaggerate the destruction effected by this pest. I live in Birmingham and am well acquainted with the trucking interests there. Nothing had been heard of it generally prior to the latter part of July or the 1st of August of the past year.

Mr. ANDERSON. 1920?

Mr. HUDDLESTON. Yes, sir. No doubt its existence has been known some time, and it has been there a year or two years, but the average farmer knew nothing about it until that time, and suddenly he noticed that his beans were all being made lacework in a night or two, and they bore no more beans, and beans went off the market. It meant the loss of their crops—men lost their crops; total losses. I have seen fields of several acres that did not produce a single bean and that were destroyed in three or four days. The destruction seems to be by caterpillars or larva. I do not know that I have ever seen one of the beetles. I am not sure that I would recognize it. But the eggs are laid on the plant, and the larva is a greenish thick caterpillar, orange colored, somewhat hairy and flat, about three-quarters of an inch long, and they stay on the underside of the leaves, and they eat all the underside of the leaf off and just leave it sort of a lacework, and the top skin of the leaf is not taken away. And, as I say, they are voracious and do their deadly work very rapidly, and just one or two on a large bean plant will destroy it in a very short time.

Now, of course, a city of the size of Birmingham, these large trucking interests around it, and so far as the bean feature of it is concerned, that is completely destroyed for the present by this pest. It seems to prefer the bean over the pea. Of course, the bean crop in Alabama is a tremendous thing, and I might say throughout the fertile lands of the South generally. But I would like to refer you to the statistics on the value of the bean crop; otherwise I am afraid I would think I was exaggerating, because when I tell you that in a small country village of, say, 1,500 people, farmers from 10 or 15 miles around haul in enough beans to ship away 40 to 50 carloads in the course of a season——

Mr. ANDERSON (interposing). That is the canning industry?

Mr. HUDDLESTON. No, the cowpeas; they are not canned. They are grown in the fields for hay and they make fine food, either green or dried.

Mr. MARLATT. The cowpea is really a bean.

Mr. HUDDLESTON. No; I can not make that out of it.

Mr. MARLATT. We count it a bean.

Mr. HUDDLESTON. I like them very much, both green and dried. It furnishes a large item of the food of the people in that section.

Mr. BYRNES. Peas and rice.

Mr. HUDDLESTON. Not in my section; they do not have rice, but they do eat the peas, and have them very often, about every other

Mr. BYRNES. The superstition is that if you eat beans there on certain days you will have something to eat the year round.

Mr. HUDDLESTON. That is verified by the fact that the Alabama farmers have something to eat all the year round.

As I say, this pest seems to prefer the bean over the pea. It is a very serious situation and one that deserves immediate attention. I want to call attention to this fact: Evidently our humid climate there has caused a very considerable multiplication of the pest over what it would be in Colorado, or the mountainous country, and our milder winters. If this pest lived through the Colorado winters and summers there is no place in the United States where they grow beans and peas and soy beans where it will not thrive, and now that it has been introduced east of the Mississippi it is likely to go over the whole country and destroy the entire bean crop if something is not done.

I just want to make this suggestion: It is mighty hard to tell about the importance or value of a crop of beans or peas by looking up commercial statistics. Nine-tenths of the beans and peas are grown in the kitchen garden and are eaten by the man that grows them, and if you are going to take that article of food away from the farming people you are going to ruin them. It is the most serious loss that they could suffer, and there is not another item of the garden so important to the farm as beans and peas. If they tackle other feed, I do not know. But if they would go after peanuts also, which may be the case, it would be doubly serious. I am told that it took the soy bean, and that is a field crop.

I am very much interested in the matter, and so is everybody in my section of the country, and so would everybody be if they could go to one of these fields and see what they do. The boll-weevil is a very destructive pest, but occasionally a little cotton will get by, a little cotton will grow in a field that is attacked by the boll-weevil, but no beans will grow in the field attacked by this pest.

Mr. ANDERSON. Mr. Marlatt, is this appropriation based on any particular estimate as to the amount of traveling expenses, etc.?

Mr. MARLATT. A provisional estimate of men and means made for this appropriation; but an estimate of that kind is largely theoretical. The cost is based on the amount of inspection and certification which will be required. Until you start in on it you do not know what is going to be required. We had to base these estimates on other similar quarantines. We have had a lot of experience in such work in New England in connection with the moth quarantine and in Texas and Louisiana in connection with the pink bollworm quarantine and control work. Similarly, also, in New Jersey, in connection with the Japanese beetle. We have, therefore, a good idea of what it will cost, in general, to administer such a regulated quarantine, and \$130,000 of the \$150,000 requested would go into that sort of work and the balance would be for research work and experimental work.

Mr. ANDERSON. Is this bean crop shipped out of the State extensively; is it a crop shipped to distant markets?

Mr. MARLATT. I think the most of the local crop is consumed in Birmingham. The cowpea crop is a fodder crop in part and may be shipped out.

Mr. HUDDLESTON. Not as a fodder crop, but as a dried pea.

Mr. ANDERSON. Will the insect itself be transmitted outside of the district?

Mr. MARLATT. It may be transmitted by almost any goods shipped out of the district. Inspection and, if necessary, disinfection will not be limited to beans, but will include all sorts of material and goods which may have been in contact with the insect shipped out of the district, even farm household furniture.

Dr. HOWARD. The difficult thing is that it hibernates and passes the winter as a beetle, and the beetle hides away in all sorts of places.

Mr. WASON. Then I understand when the season in which this pest thrives has passed the larva takes the form of a beetle and stays in that state until the following season, when it lays its eggs on beans and cowpeas and other kindred growths, and then he lays his eggs and destruction takes place wherever the larva reaches?

Dr. HOWARD. Yes, sir.

Mr. WASON. And the only thing you have to look out for is to see that this beetle is not carried or transmitted to other territory; is that right?

Mr. MARLATT. Substantially.

Mr. ANDERSON. Does this beetle fly?

Mr. MARLATT. I can not answer definitely as to the extent of its flying, but it belongs to a group of flying beetles. It is related to the ladybird beetles, some of which are beneficial and some are destructive. You would recognize it as a ladybird. It is yellowish with black spots. It undoubtedly has, however, considerable powers of flight and it hibernates in any protection, just as do ladybird beetles. The control by quarantine and other means of a pest of this sort is one of the most difficult things imaginable, as you can see yourselves.

It amounts simply to an effort to control, and is bound to fail here and there. A quarantine is worth the cost as a control feature, as it has been in New England, where it has kept the gypsy moth in check for many years. It may be that by this time next year we will know that it has gotten away from us. It may be found in a half dozen other States in such way that further quarantine would be foolish, but in the hope that it is limited to Alabama, a quarantine is now justified.

Mr. BYRNES. One idea has impressed me: What is to prevent its being sent from Colorado to some other place, just as it was transported to Birmingham?

Mr. MARLATT. Nothing whatever, unless action be taken with respect to Colorado and the other States.

Mr. BYRNES. It occurs to me that if you quarantine Alabama successfully, after it got into Alabama from Colorado, it may get into Missouri or some other State.

Mr. MARLATT. I fancy this shipment of hay was an unusual circumstance. That would probably be the only method by which it could be transmitted, and it is possible the other States will quarantine against Colorado to prevent the beetle from spreading into the South.

Mr. BYRNES. I hope you will issue the quarantine; it would be the best for the South, but I do not know about the stock.

Mr. MARLATT. This pest is very abundant and destructive in Colorado and New Mexico and it has been studied by the experts of those States, notably Colorado.

Mr. ANDERSON. Then they have no way of controlling it so far as the bean crop is concerned?

Mr. MARLATT. Very little. It is possible it can be controlled by spraying.

Mr. BYRNES. How much of this do you expect to spend in the quarantine?

Mr. MARLATT. The letter which has just been read states \$130,000.

Mr. BYRNES. And the balance would be spent in what way?

Mr. MARLATT. The study of the habits and local control based on its behavior during the year, either by spraying or getting it in its hibernating quarters, or any other means that may be developed.

Mr. WASON. Doctor, has your department made any study of this pest in Colorado and New Mexico and those States out there heretofore?

Mr. MARLATT. Only minor studies. It has been rather a local and State problem there and we have not taken it up except incidentally.

Dr. HOWARD. We do not go into the State locally, unless they ask us to. They usually have State experts.

Mr. WASON. If you find in Colorado a bug like this, or the potato bug that all of us have come in contact with in years gone by, don't you go into the matter to see how serious a matter it may be in the years to come?

Mr. MARLATT. It never occurred to anyone that it might suddenly become so important a factor away from its western area, to which it had been restricted for 50 years.

Mr. RUBEY. Haven't you got this bug in the encyclopedia of bugs?

Mr. MARLATT. It was a known insect.

Mr. ANDERSON. And you know all about its habits?

Mr. MARLATT. Something was known of its habits in Colorado.

Mr. ANDERSON. You think it would act differently in different places?

Mr. MARLATT. There is no doubt about that. In line with this sudden outbreak in Alabama, there are many potential plant pests, in fact, I would not be exaggerating if I were to say there were hundreds of such pests in this country which may at any time develop into major pests. It is manifestly impossible for the Bureau of Entomology or the Horticultural Board to study all of these or to quarantine against them. We have established 40 quarantines now, and each one of these is a separate problem, and you can realize that we can not take up many of these things when they are mere minor or potential dangers. Our hands are full of the major ones, but some of these minor pests, insects or diseases, which are not now recognized as harmful at all are bound to develop new habits and increased powers of damage. It is like the strawberry beetle that has been in the country for many years and suddenly becomes an enemy of roses in greenhouse cultures, a brand new habit which no one could have predicted.

Mr. ANDERSON. Now, you have an item in miscellaneous, on page 310—item 28, on page 310.

UNEXPECTED INSECTS' EMERGENCY FUND.

Dr. HOWARD. Quite right; it is an item to appropriate \$100,000, to be available for expenditure in case of an emergency outbreak. This item is very well introduced by the discussion of Mr. Marlatt and Mr. Huddleston. If we had had an emergency fund that could be drawn upon we could have gone down after this new pest. We could have done the same thing with the gypsy moth 40 years ago and it would have resulted in its extermination, but we had no such a fund. We are limited to our regular appropriations, and they are not sufficient for an emergency. The money may not be drawn upon for next year, or the next year, but it would be a tremendous safeguard if we had such a fund. We have one man down in Alabama now studying the bean-leaf beetle in this infested district, but if we had this fund we could have sent a half dozen men down there and we would have had the whole matter settled, possibly, without coming to you.

Mr. RUBEY. Isn't it a fact that if you had had this fund in years gone by you would have found something to use it for; for instance, the citrus-canker and the corn borer? I think it is a good thing; but the question of using it is another thing. Some of these minor insects may become major insects.

Dr. HOWARD. I do not mention the probabilities. I said it may not be called upon. If we had had such an emergency sum at our disposal in previous years I think it would have resulted in a saving not only to the people but a great saving to Congress in subsequent appropriations. I think that is all that it is necessary to say about it.

TUESDAY, DECEMBER 28, 1920.

BUREAU OF BIOLOGICAL SURVEY.**STATEMENT OF DR. E. W. NELSON, CHIEF, ACCOMPANIED BY
MR. W. C. HENDERSON, ASSISTANT CHIEF.****ADDITIONAL EMPLOYEES—READJUSTMENT OF AND INCREASE IN SAL-
ARIES—ELIMINATION OF LOWER GRADE POSITIONS.**

Dr. NELSON. The first item, Mr. Chairman, are the changes suggested in the salaries. The first is the increase in the salary of the chief, which I suppose will be handled by the Secretary. Next is an increase of \$200 asked for the chief clerk.

Mr. ANDERSON. If you will refer to the number of the items we can keep them straight in the record.

Dr. NELSON. Item No. 1 refers to the chief. Item No. 2 refers to the salary of the chief clerk, who now has the title of executive assistant. It is recommended that his salary be increased \$200. It is very difficult to keep a competent chief clerk at a salary of \$1,800. The demand for men who have the ability to hold that office is such that it makes the situation extremely embarrassing, and I trust the committee will be able to approve of the increase as suggested here.

That office has been held since July 1, 1911, without a change of salary, and the work and responsibilities of the bureau have grown very much.

NUMBER OF EMPLOYEES.

Mr. BYRNES. How many employees are in the bureau?

Dr. NELSON. Five hundred and ninety-one. We would like to drop the words "and executive assistant" from his title so as to leave him in the same position as other chief clerks. That is just a matter of uniformity of title.

The next is No. 3, one administrative assistant at his present salary.

Mr. ANDERSON. Was that place of administrative assistant added last year?

Dr. NELSON. No, sir; that position was created in 1915. Item No. 4, one executive assistant, \$1,800. This also is an old position.

Item No. 5, one clerk at \$2,000, is a new place. This new place would be given as a promotion to a clerk who is now receiving \$1,800 and has been an auditor in the Department of Agriculture for 30 years. This employee is very able, conscientious, and useful, and the promotion has been well earned.

Dr. NELSON. No. 6 is the transfer of one executive clerk from the lump-sum fund with a change of title. This position was established last July.

Mr. ANDERSON. Is he now getting this salary?

Dr. NELSON. He is now receiving the salary listed here.

No. 7, four clerks of class 4, an increase of two, one by transfer from the lump fund and one is a new position.

No. 8, seven clerks, class 3, an increase of three, two by transfer from the lump fund and one is a new place.

Mr. BYRNES. What is the necessity for these two additional places?

Dr. NELSON. There is only one new place here.

Mr. BYRNES. There is one new position under item 7, and one new position under item 8.

Dr. NELSON. One new place under item 7 is to be filled by promotion of the head bookkeeper who does a class of work calling for a higher salary. The other is due simply to the growth of the business of the bureau. Our business is continually growing in practically all lines of our work.

Mr. BYRNES. You are getting along, though, with the force you have this year?

Dr. NELSON. Yes. These new places are subject to the increases we are asking for; that is, they are to meet the increased work that would be required, except as specified where urgently needed to enable us to promote and retain competent employees——

Mr. BYRNES (interposing). They are dependent upon the adoption of the items in the bill calling for new work?

Dr. NELSON. Yes, sir. Mainly. We are getting along with the clerks we have now, but we will naturally need additional force if we have additional money giving us additional business. We do have urgent need for increased salaries in the special instances named for employees now in the service.

No. 9 is one clerk at \$1,500, who is now receiving that amount.

No. 10, 16 clerks of class 2, an increase of 7, 5 by transfer from the lump fund and 2 new places. They are in the same category as the others.

Mr. ANDERSON. Of course, the clerks you are transferring are now on the roll.

Dr. NELSON. Yes, sir; they are on the lump fund.

Mr. ANDERSON. They have no relation to any new estimate?

Dr. NELSON. None whatever. It is merely a technical transfer according to the requirements of the law.

Mr. RUBEY. And these are all basic salaries?

Dr. NELSON. Yes, sir. No. 10, 16 clerks, an increase of 7, 5 by transfer and 2 new places; one of these new places is for a clerk to be used in connection with the Alaskan work, and that will be needed if we do not get the increase, because that is a new appropriation and the work has developed under it so that we need another clerk at the present time.

No. 11 is one clerk at \$1,260, who is receiving that amount at the present time.

No. 12, 17 clerks of class 1, 1 by transfer from the lump fund and 2 new places. The two new places are in the same category as the others in connection with any increase that is given in the appropriation.

Mr. ANDERSON. Your note here says that these places are submitted in lieu of two clerks at \$900.

Dr. NELSON. Yes; I beg your pardon. They are to take the place of two \$900 clerks, which latter positions will be dropped. You can not get a good clerk at the present time for \$900, and so we desire to have those places raised to \$1,200.

Mr. ANDERSON. Then, that would really mean an increase to \$1,440 with the bonus?

Dr. NELSON. No, sir. The bonus is allowed the \$900 clerks, so the increase would be really that on the basic salary. No. 13, two clerks at \$1,100 each, the salary they are getting now.

No. 14, one clerk at \$1,080, the present salary.

No. 15, three clerks at \$1,000 each, their present salary.

Mr. ANDERSON. Are those two places at \$900 vacant now?

Mr. HENDERSON. I am not sure. They have been held for short periods of time, and we have had people appointed to them, but have not been able to keep anybody at that salary any length of time that was of any value.

Mr. BYRNES. What character of work are they engaged in?

Mr. HENDERSON. They have been doing the simplest kind of clerical work we have in the bureau, helping in the Division of Biological Investigations, carding information and work of that character.

Dr. NELSON. It is impossible to keep those places filled. We get a person there, and he immediately begins looking around for some other position with a larger salary and the place is soon vacated.

No. 17, one preparator, an increase of \$200. This is in our taxidermist laboratory, where we have to prepare our scientific material, and it is almost impossible to hold a competent man at \$1,200. The man who is holding the same position at present is competent, and we have had him temporarily from time to time. He has shown that he is a good, competent man, but it is very questionable whether we will be able to retain him unless he can be paid more money.

No. 18 is another preparator at \$900. This is very simple work and does not require special training and experience, and the person occupying it is drawing the \$900 salary and will be retained at the same amount.

No. 19 is one messenger at \$900, an increase of \$180.

Mr. RUBEY. Are you able to keep that man under item 18 at \$900?

Dr. NELSON. The employee doing this simple work appears to be satisfied to hold the position.

No. 19 is to give a messenger \$180 more. He is a very competent man.

Mr. ANDERSON. Is this really a messenger or a laborer?

Dr. NELSON. This is a messenger.

No. 20, one photographer, at \$1,500, who is now receiving \$1,300. We desire to give him an increase of \$200. This is a man who has been in the bureau, and received his last promotion July 1, 1911. He is a man with family, and, as you can appreciate, has had a pretty hard time to live during the last two years on the salary he is getting. He is doing excellent work, and there is not any question but what he could leave us and get a higher salary if he desired. He seems to like his work, and has stayed there for a long time.

No. 21 is one game warden, an increase of \$200. This is the man in charge of our largest game preserve, the Montana Bison Range, where we have about 18,000 acres fenced, with hundreds of buffalo and elk on it. He is a very faithful and competent man, and has been there a long time, and deserves a promotion. He is now getting \$1,200. Other game wardens with no greater responsibilities are receiving \$1,400 or more.

No. 22 is one messenger boy, at \$600.

Mr. ANDERSON. No; item No. 22 is evidently intended to provide an increase for a young man who is employed now under item 23 at \$480 a year.

Dr. NELSON. Yes; that is in lieu of a \$480 place being dropped under item 23.

Mr. BYRNES. Do you mean by that that you have two at \$480 under item 23 and want to promote one?

Dr. NELSON. Yes.

Mr. ANDERSON. You have two messenger boys at \$480 and you are promoting one to \$600, leaving one at \$480.

Dr. NELSON. Yes; that is right.

Item No. 24 is one laborer at \$900, an increase of \$300.

Item No. 25, two charwomen at \$240 each, their present salaries.

Mr. Chairman, do you care for me to go over the detailed summary in explanation of these increases and changes?

Mr. ANDERSON. No; I think you have sufficiently covered that.

FURNITURE, SUPPLIES, INCLUDING PURCHASE OF BAGS, TAGS, ETC.

Dr. NELSON. Item No. 26, on page 193, there is a change in the wording, as follows: "including the purchase of bags, tags, and labels printed in the course of manufacture." The requirements of the bureau in the field are to have a large number of bags made and

labeled for the use of our men in carrying out their poisoning work, for the distribution of poisoned grain in the destruction of injurious rodents, and similar uses. Each bag has to have printed on it in large letters the word "Poison," and then be labeled "Biological Survey, U. S. Department of Agriculture," and to have that done by the Government Printing Office would naturally be an extremely expensive and roundabout way of doing it. The manufacturers of these bags will make them and will put this printing on at almost the same cost as they would make the bags for, so that this will relieve us of a technical violation of the requirements of law, if it is put in the bill.

Mr. RUBEX. Are you having that printing now done at the Government Printing Office?

Dr. NELSON. I do not know just how that has been handled in the field.

Mr. HENDERSON. It is my recollection the bags have been printed by the manufacturers, but we have had tags printed in the Printing Office.

Dr. NELSON. And the delay is exasperating. It is weeks, and sometimes months, before you can get anything out, and the cost is very high. This will enable us to do this special class of work more promptly and efficiently.

MAINTENANCE OF THE MONTANA NATIONAL BISON RANGE AND OTHER RESERVATIONS.

Item No. 27 is for the maintenance of the Montana National Bison Range and other reservations, and for the maintenance of game and other purposes. This item covers the administration of 75 big game and bird reservations scattered all over the United States, from Florida to the Hawaiian Islands and to Alaska. They are in many of the different States. Nineteen of them cover reclamation projects. The Montana Bison Range, of which I just spoke, has 18,521 acres under fence, inclosing 336 bison, 200 elk, 44 antelope, and 20 deer. This is one of the finest game preserves in the world. It is a beautiful location, with the buffalo and these other animals in their native surroundings. The Wind Cave Game Preserve in South Dakota takes in a part of the Wind Cave National Park. There we have 4,160 acres inclosed with a gameproof fence, with 67 bison, 121 elk, 20 antelope, and 2 deer. We have a warden resident there, and also a resident warden at the Montana Bison Range, with an assistant.

Mr. BYRNES. It seems that you are asking for an increase of \$5,135 over the appropriation for this year, which is to be spent in great part for increased salaries and wages.

Dr. NELSON. Oh, no; a very small part of it would go for increases in salaries.

Mr. BYRNES. I said salaries and wages. I notice the proposed increase in wages amounts to \$2,000, and an increase of almost \$2,000 for salaries, which would be \$4,000 of the \$5,135.

Dr. NELSON. In the explanatory note underneath it is stated that there is an increase in this item of \$5,300 and that \$4,500 is for the upkeep and maintenance of the winter elk refuge in Wyoming, the

national bison ranges in Montana, the Wind Cave National Game Preserve, in South Dakota, and the Niobrara Game Preserve, in Nebraska, and the larger bird reservations.

Mr. BYRNES. The note reads that way, but when you turn over to your itemized statement it does not correspond at all, because the \$4,500 which it is explained in the note is for the upkeep and maintenance of winter elk in the States mentioned is shown to include \$2,000, approximately, for increases in salaries and exactly \$2,000 for increases in wages.

Dr. NELSON. Where do you get that?

Mr. BYRNES. On page 194, in the tabulated statement.

Dr. NELSON. I do not see where the \$2,000 comes in.

Mr. BYRNES. That is what I am asking. The appropriation this year for salaries is \$20,175, and the proposed amount for salaries estimated for 1922 is \$22,110, which lacks only a little bit of \$2,000 more, and then, if you will look at wages for 1921, you will find the amount is \$6,300, and the estimate for 1922 is \$8,300, which is exactly \$2,000 more, so that \$4,000 of the increase would be for increased salaries and wages.

Dr. NELSON. The wages, of course, are for the employment of men putting in improvements.

Mr. BYRNES. That is what I am saying. Over here it says it is for the upkeep and maintenance of the elks.

Dr. NELSON. The labor is part of that upkeep.

Mr. BYRNES. That is what I wanted to know, whether that is the explanation, because that is the only explanation that would in any way reconcile the language of the note with the itemized statement.

Dr. NELSON. That is the explanation. I may add that by a typographical error in the Book of Estimates the number of men to be employed for wages in 1921 is given as 65, the same as for the estimate for 1922. It should be 55 for 1921, the estimate for 1922 being for 10 more laborers.

Mr. BYRNES. When you say upkeep and maintenance of the elk you mean upkeep and maintenance of the men who guard the elk?

Dr. NELSON. No; wages of men employed in making necessary repairs and improvements needed to keep up the reservations—repairing or building fences and similar work.

Mr. RUBEY. The only way you can upkeep them is to use labor.

Dr. NELSON. Yes, sir. Wherever we put in improvements or have to repair fences, or anything like that, we have to hire men, and we are continually employing laborers.

Mr. RUBEY. Practically all of this money is spent for labor, is it not?

Dr. NELSON. Yes, sir; for wardens' service, labor, and materials.

Mr. RUBEY. If you want to repair or improve your fence, you have to hire men to do that?

Dr. NELSON. Yes; for instance, in one place we have about 18,000 acres inclosed with a fence. Every now and then that fence is broken or there is a washout and the fence has to be repaired, or it becomes old and must be replaced here and there.

ADDITIONAL EMPLOYEES.

Mr. BYRNES. What is the necessity for additional men to do that? Are the fences in such a condition as to necessitate more laborers?

Dr. NELSON. These fences are of woven wire 7 to 8 feet high, stretched to conform to the irregular ground. One man can not possibly repair them or build them. We have wardens who have to ride the range and see that its condition is all right; they have to continually supervise and care for the entire reservation miles in extent so that they can not start in and work continuously as laborers, although they often take part in the work going on. If the fence is washed out or a stretch of new fence is to be built, a cabin or corral built, it is necessary to hire laborers to do it.

Mr. BYRNES. But what is the necessity for an increase in the number of men?

Dr. NELSON. The coming year we will need to do more work; at the Niobrara Reservation the number of game has increased until there are too many of them for the present small pasture of about 400 acres. We have a new fence several miles long partly built which we hope to complete next year. We have the wire there, the posts, and the postholes are being dug, so that it will become a question of putting up the fence.

Mr. BYRNES. Is there any reason why the man you have there can not do it?

Dr. NELSON. We have a man there, but this requires a gang of men, although the man who is living on the range will also help in the work.

Mr. BYRNES. He has a part of the fence built, has the holes dug for the posts yet required, and has the wire there, so that he has done pretty well.

Dr. NELSON. No; he did not dig the postholes.

Mr. BYRNES. Who did?

Dr. NELSON. The men we hired; we have been employing people there.

Mr. BYRNES. If you have been employing people—if this man has been working and you have made such progress—why increase the number.

Dr. NELSON. But we can not make further progress unless we can hire more men. We had money which was allotted to that last year, and that enabled us to get the thing started.

Mr. BYRNES. You have had some funds other than this?

Dr. NELSON. Yes; and that was specially allotted to do that.

Mr. BYRNES. Where did you get that money?

Dr. NELSON. That was money that came from the emergency fund that was reappropriated.

Mr. BYRNES. How much did you have allotted in that way?

Dr. NELSON. \$9,064.64.

Mr. HENDERSON. If you will pardon me, there is just a point there in regard to that increased labor cost. We have been greatly handicapped this year on account of not having sufficient funds to carry on these reservations. The cost of labor has increased, and particularly on the elk refuge we have been handicapped in making the necessary improvements, of plowing and preparing the soil for hay and cultivating hay and putting the crop in. On the Montana Bison Range, as was suggested, that fence was built about 10 or 12 years ago, I think, and it has begun to deteriorate and we will have more expense in connection with the repair of that fence next year than

in the past: it is beginning to show signs of age and of needing repair. The increase is largely to take care of the increased cost of labor. Because of that in the past few years we have not been able to do many things in connection with these reservations that should have been done, simply because of the lack of funds, and that is all that increase is intended to cover.

Dr. NELSON. On the Niobrara reservation in Nebraska, where this new fence is being put up, we have 28 bison, 47 elk, and 2 deer; at Sullys Hill, N. Dak., we have 780 acres under fence, with 7 bison, 35 elk, and 8 deer. The winter elk refuge in Wyoming, at Jackson Hole, is the place where we raise hay to feed the elk when they come down in the winter. Last year we had 850 tons of hay there and the winter was an excessively severe one, so we received an emergency authorization to spend \$45,000 in purchasing hay, but only \$36,000 of it was used. That gave us 573 additional tons of hay, and the State of Wyoming put up about 500 tons, so that between us we were able to save most of those southern elk.

NUMBER OF ELK.

Mr. ANDERSON. That was a deficiency appropriation?

Dr. NELSON. The money thus spent came from our regular appropriation, thus creating a deficiency. Then the deficiency appropriation gave us back that money late in the season, some of which was used as stated above. Last winter 8,000 elk came down and were fed on our reservation. There is little doubt that if we had not been able to supply that 1,300 tons of hay, instead of their being, as there are now, about 12,000 elk living in that district, they would have been down to 2,000 or 3,000 or possibly less. The conditions were exceedingly severe. Only a few years ago there were supposed to be 60,000 elk in the Yellowstone herds, but there are less than 20,000 to-day. In the last few years they have been cut down tremendously.

We have had great difficulty for some years in meeting the growing needs of all these reservations effectively with the appropriations, and several times the appropriations have been increased a few thousand dollars simply to help meet urgent requirements. The difficulty of handling 75 reservations and doing anything with them, widely scattered as they are, with the small appropriation available for this purpose will, I think, be evident to anyone who becomes familiar with the situation. In fact, our funds enable us to care for and properly keep up only a number of the more valuable and important reservations.

Mr. ANDERSON. How many of these game refuges are there that you are really undertaking to administer?

Dr. NELSON. Ten reservations have fully paid warden service throughout the year and on 16 reservations we have wardens part of the time each year. We have 5 that are the big-game reservations, where we have resident wardens. In Florida we have wardens for three of the reservations, and we have a resident warden in the Aleutian Islands. That is where a part of that increase went last year. For years we have had that enormous island reservation up there, but have been unable to do anything with it. People wish to use

the islands for fur farming, experiments in grazing, and so on, but we could not handle the questions brought before us regarding that area without a representative there. Last year Congress gave us the money and we put a man up there, and for the first time we are able to handle the reservation more satisfactorily. A part of this increased money is needed to help cover the expenses of maintaining this reservation. Those islands are 800 miles long and the costs of travel are high. We need more money than we have in order that this warden can get about and investigate the islands and learn what value they may have for grazing or fur farming. With such information we can pass intelligently on applications for their use, while at the same time helping safeguard the interests of the resident natives. It has already been demonstrated that the Aleutian Islands are favorable for reindeer. Some years ago we put reindeer on two of the islands and they have done very well. What we ought to have now is information as to the size and availability of many others of those islands for reindeer. Many of them can no doubt be used to advantage without interfering with the object of the reservation.

Mr. ANDERSON. Are the islands inhabited?

Dr. NELSON. A few of the Aleutian Islands are inhabited by small settlements of natives and a very few white traders, but the majority of them are unoccupied.

Mr. ANDERSON. You do not put reindeer on uninhabited islands, do you?

Dr. NELSON. Reindeer placed on an island could not wander away, and by placing one or two native families with them as caretakers the herd could be looked after at moderate cost.

Mr. ANDERSON. But if you are going to put reindeer on those islands it should be on some business basis.

Dr. NELSON. That is right; and undoubtedly individuals or companies will develop this business. To handle this reservation so that its resources may be developed and the bird life safeguarded it is urgently necessary for us to secure more information concerning the physical characteristics of the islands. We are getting numerous inquiries about them, and have already issued permits for the use of 55 of the smaller islands for fox-farming purposes, practically all for blue foxes. A permit to use an island protects the holder in its exclusive use for the purpose specified. When the permittee puts on foxes and then leaves the island for a long time, he is likely to lose them by poachers, but when proper care is given good success is usual.

IMPROVEMENT AND MAINTENANCE OF GAME PRESERVE IN SULLYS HILL NATIONAL PARK, N. DAK.

The next item is 28, page 194, for the improvement and maintenance of the game preserve in Sullys Hill National Park, in the State of North Dakota. That is a special appropriation. Sullys Hill is becoming important; it is a great resort for the people of that whole region, and they come in there from as far as 200 miles away to picnic, spend Sundays there, and see the animals. We are putting up a women's resthouse and pavilions to shelter the people during rainy weather, making a parking place for automobiles and other

improvements. On top of Sullys Hill we plan to put a lookout pavilion, as from it there is a beautiful view of the surrounding country; it is the highest point anywhere in that region. These improvements are already well under way, and with the continuance of this appropriation we will be able to go on and complete them. As many as 800 people go there in a day, commonly in family parties, and spend the day picnicking; the reservation contains a beautiful piece of woodland, and the most attractive spot anywhere in that region. No increase is asked in this item.

FOR INVESTIGATING THE FOOD HABITS OF NORTH AMERICAN BIRDS AND
OTHER ANIMALS IN RELATION TO AGRICULTURE, ETC.

The next item, No. 29, on page 195, is for investigating the food habits of North American birds and other animals in relation to agriculture, etc., for rearing fur-bearing animals, and for work in destroying predatory animals, such as wolves, coyotes, and for destroying injurious rodents. An increase is asked under this item amounting to \$143,960. The increase is itemized in the footnote.

EXTENSION OF FIELD INVESTIGATIONS OF BIRDS.

Under (a) \$8,020 is allotted for the extension of field investigations of birds. That should have said birds in relation to agriculture.

We are continually having calls for help from different parts of the country. For instance, the crow is a tremendous pest in many places. In eastern Oregon and Washington the crows became exceedingly destructive, so much so that they destroyed crops on a wholesale scale. For parts of two years we have had a man out there investigating the situation and working out methods for controlling these pests. We have had urgent appeals to send some one out there this winter, but we could not do it, because we did not have the money. This last fall we had a man in Oklahoma, where crows in enormous numbers gather in the winter, and have become an extremely destructive pest. The other day we had a call from Arizona, where they are trying to grow winter vegetables in a new area on the desert by pumping water for irrigation. They were raising lettuce, and the desert birds found this green vegetation in the midst of that arid section and at once came in and destroyed the growing plants. One of our men, who investigated the situation, reported that in a week he saw the destruction of a 40-acre field of lettuce which would have yielded a crop worth about \$40,000. Naturally the people wish to know how to prevent such losses.

Mr. ANDERSON. Can you tell them how to prevent it?

Dr. NELSON. As a rule, we can. We have not in this case, because this has just happened. But we have been very successful in finding methods of controlling these bird pests. In Washington, where they were raising almonds, the crows were absolutely stripping the orchards of the nuts. The people tried shooting and every method they could think of, but could not keep them off. One of our men finally tried the experiment of taking green almonds off the trees, slitting them and putting in some strychnine and scattering

them on the ground in the orchard. The crows would come in, and seeing the almonds on the ground would eat them, and were promptly killed. The surprising thing was that it needed the killing of only a few crows before the whole flock got up and left the neighborhood; they were intelligent enough to immediately see that there was something wrong with those almonds and they quit.

Mr. RUBEN. You simply drove them off to bother somebody else.

Dr. NELSON. But the fact is that if similar measures are used wherever they become a pest they would soon be forced to leave for the uncultivated lands and the losses would end. Undoubtedly crows can be poisoned on a large scale, and if they continue to become as pestiferous as they are showing up in some places it may be necessary to provide some means of wholesale destruction. The crow is a very useful bird at certain times of the year. It eats cutworms and other harmful insects, frequently following the plow for this purpose and does much good, but when they gather in large numbers and go after crops they are tremendously destructive pests. We are constantly having calls for help in controlling losses from many kinds of birds which are at other times of great value, such as the robins, which attack cherries on a large scale, and others. Our work is to devise methods of preventing these losses so far as possible without a widespread destruction of otherwise useful birds. These calls for help from fruit growers and other farmers are swamping us because they are beyond our means to handle, and we are asking for increased money to take care of that phase of the work.

FOR EXTENSION OF FUR-FARMING INVESTIGATIONS.

The next is item (b), \$2,375 for the extension of fur-farming investigations. That is for general expenses in connection with that work. For several years we have had in northern New York an experimental fur farm. We are there carrying on investigations in connection with the mink, skunks, raccoons, and blue foxes, and recently have purchased a few red foxes.

Mr. ANDERSON. Is there any revenue from that farm?

Dr. NELSON. No; it was purely experimental. We are studying the parasites and diseases and working out methods of treating the animals for parasites and diseases for the use of the fur-farming industry. I might bring out here the rapid growth of the fur-farming industry in the United States. A short time ago on my way east from California I was asked to stop over at Muskegon, Mich., to look over the situation there. I found a considerable number of fur farms around Muskegon, on which they have between one and two thousand silver black foxes and an investment running between one and two million dollars. As a whole these fox farmers have been successful, but the situation is such now that they need some help and need it promptly to avoid serious losses. An expert study of the parasites of the animals and of the best methods of feeding are urgently needed to improve the quality and the fertility of the foxes.

Mr. ANDERSON. I understand the stock seems to run out, and that they do not breed as well as in the earlier days.

Dr. NELSON. Yes; that is one serious trouble. The silver-fox farming is a new industry, and men have gone into fox ranching

without previous experience. There is no body of trained experts familiar with the best methods of treating the animals for parasites and disease and to direct the farmers as to the best methods of feeding the animals. As a result when things begin to go wrong on a fox ranch the owner is often helpless to correct the situation. The fox farmers about Muskegon are very anxious to have an experimental station established there, with a laboratory and experts to study these questions. It is a good center for such an establishment. Representative McLaughlin, who lives at Muskegon, is much interested and asked me to prepare an estimate of what such an experimental station would cost.

I find that to establish a station of that kind at Muskegon and run it for the first year would cost about \$35,000; that would be the cost of putting up the necessary fences, pens, buildings, including a laboratory, equipping it, and hiring experts. The question is, What ought to be done at the present time about establishing such a station? Unquestionably such a station is needed and would give extremely valuable results. I do not know whether the members of the committee are familiar with the fact that the fox-farming industry is rapidly becoming of considerable importance. It originated in Prince Edward Island, where they have \$13,000,000 or \$14,000,000 invested, and get, I think, something like \$3,000,000 a year out of it; it has spread thence throughout Canada and into the northern United States from Maine to Minnesota and Alaska, and is becoming a valuable and rapidly growing industry. The Canadian Government has awakened to its importance, and is doing all it can to foster the industry in Canada, and we are trying to help it along in this country.

Mr. BYRNES. What would you propose to do at an experiment station of that kind?

Dr. NELSON. We would have a laboratory and houses for a laborer and the experts, who would study the animals. We would have a small stock of animals and we would start in studying the best methods of feeding the foxes and of controlling their parasites. At the same time the experts would make a close study of the animals and the best methods of handling them on the surrounding ranches where they already need attention.

Mr. ANDERSON. If you are going to study these things in the surrounding ranches, why do you want a lot of buildings of your own?

Dr. NELSON. We should have some place for a laboratory where cultures of the different diseases and parasites can be studied; also pens where both diseased and healthy animals can be maintained for close observation and study. The laboratory must be equipped and there must be places for the people to live; they could not simply move about from one place to another; they must have some abiding place.

Mr. ANDERSON. They have to live somewhere anyway, even if they are not interested in stock farming.

Dr. NELSON. But they have to live where the animals are, where they have their hospitals for the sick animals, and a laboratory in which to carry on their investigations.

Mr. BYRNES. What would you hope to discover that has not been discovered at Prince Edward Island and these other places where the industry has been progressing?

Dr. NELSON. We would hope to discover a great deal. The people are investigating in Prince Edward Island, but the business is so new that we have little definite information to use; if there was that information available, these people would avail themselves of it. The Canadians have a man up there studying these animals but, as I say, but little information is available to us. This is the same work as is being done for the ordinary branches of the live-stock industry, which is being developed by the Bureau of Animal Industry. They are working out methods of feeding domestic animals and how to make them breed more freely, and to improve the quality of the animals, and the same thing must be worked out for foxes. Expert study of feeding and of diseases and their control, in relation to ordinary live stock, has been carried on for many years and is still going on on a great scale, not only under the Bureau of Animal Industry in the Department of Agriculture, but in State experiment stations all over the country. In the case of the new fox industry the same kind of information must be worked out in similar ways, and we have no mass of accumulated information to go on that begins to fill the requirements.

Mr. ANDERSON. There are some of these farms in my district.

Mr. NELSON. We are receiving inquiries and requests for help from all directions, and practically everyone appears to be having difficulties in the business. There is much work to be done in the matter of working out better methods of breeding and building up the stock; there is much breeding stock on the farms in this country that is not first-class and which needs grading up.

Mr. ANDERSON. It seems to me you would accomplish more by trying to work with these people than by setting up an independent station somewhere.

Dr. NELSON. The idea would be to work with them; the idea would be to have the station right there at Muskegon—right in the midst of these farms. There are several phases of such work in which a well-equipped laboratory is absolutely essential, which can not be done without any more than physicians could study and work without methods of handling diseases by visiting patients. Laboratories are a vital necessity for such investigations.

Mr. ANDERSON. This industry is spread from New England to California.

Dr. NELSON. Yes; and beyond to Alaska.

Mr. ANDERSON. And the industry is spreading. If you set up a station at Muskegon, they would want one in my district; they would want one in Mr. Wason's district, and another one in Montana.

Dr. NELSON. There should be a laboratory somewhere to provide a place where the experts can carry on their experiments and studies; a man can not do that in a hotel room; you must have a laboratory with microscopes, test tubes, incubators, and the other necessary apparatus and material.

Mr. ANDERSON. Send your man out to my district and I will put up a shack for him and he can work all he pleases.

Dr. NELSON. It can not be done in a shack; he has to have a place with special equipment and facilities for continuous work.

Mr. BYRNES. Do you propose an item of \$35,000?

Dr. NELSON. No; I am not proposing that item, but I am simply discussing the matter as to what should be done.

Mr. BYRNES. Then let us take up the items in the bill. I thought this item had been put in the estimates.

Dr. NELSON. No. I have brought up this matter for discussion in order to determine, if possible, what shall be done with it, whether it ought to be started at this time or not. Mr. McLaughlin will probably desire to present that to you. A station of that character is needed to help build up this new farming industry.

Mr. ANDERSON. Just what would you need at a station of this character and what will it cost?

Dr. NELSON. You must have a place for the experts to live in who are working there; you would need pens in which to keep the animals needed; you would need a laboratory in which to conduct experiments, and quarters for a laborer to live there all the time.

FOR INVESTIGATION OF NEW POISONS AND POISONING METHODS IN CONNECTION WITH RODENT AND PREDATORY ANIMAL ERADICATION.

Paragraph "c" covers \$4,200 for investigation of new poisons and poison methods in connection with the rodent and predatory animal eradication. We have been making progress slowly in improving the methods of using poison in connection with our campaign for the destruction of predatory animals and rodents, mainly in the western United States. We have recently been making more rapid advance in improved methods of handling strychnine, and we feel that if we could have the money mentioned to spend definitely on that object, we could advance much more rapidly. Further advance in improved methods of poisoning means a tremendous increase in efficiency and a corresponding saving in live stock and crops. As an example of what can be done with poisons, I may mention a recent experience. In August two of our men went into northern Arizona, and organized the stockmen there to cooperate with them in a coyote poisoning campaign. They worked for 10 days, and during that time found the carcasses of 340 coyotes killed by poison. After they got well started they were killing coyotes so rapidly that the stockmen became impatient because of the time spent in looking for dead animals. They did not wish the men to lose time that way, but said, "Come on and let us not bother about the dead ones, but go after the live ones, we know we are getting them." This little campaign lasting 10 days must have killed over 500 animals, since in all poisoning operations a considerable per cent of the dead animals are not found until later.

Mr. BYRNES. What kind of poison did you give them?

Dr. NELSON. A specially prepared strychnine in which the bitter taste is delayed. The animal gets it in his mouth about a minute before the bitter taste appears. Commonly, strychnine is so bitter that the coyotes drop it, but, by reason of having this taste hidden or delayed, they swallow it freely. Two men were sent up to another point in northern Arizona, where they worked by themselves for 21 days and took the skins of 94 coyotes they killed. This photograph shows the skins of the 94 coyotes.

Mr. ANDERSON. Have those skins any value?

Dr. NELSON. Yes, sir; they have a value. These, I think, are all good skins. When the fur market was up, we got as high as \$27.50 each for them; they are of much less value now. We have taken in

over \$240,000 from the sale of the skins of the predatory animals that we have killed.

Mr. ANDERSON. Since this work was begun?

Dr. NELSON. Yes, sir. More than \$40,000 was taken in last year from that source. Our poisoning methods can be developed and improved. We have been and are now carrying on a trapping campaign in the predatory-animal work. We have had from 200 up to about 400 trappers at one time, between the Government employees and those paid by the States and by other cooperators. We are having great cooperation on the part of stockmen and all the people out in the West. They are contributing considerable sums of money for the purpose.

Last year they put more than \$300,000 into cooperation in the predatory animal work, in addition to the time many men volunteered. The country occupied by predatory animals is so enormously large that we can not expect to have money enough to hire enough trappers to cover it all effectively that way, but we find by using poison, and with the methods now being developed, we are developing methods which will enable us to cover the country and reduce the destruction from predatory animals much more rapidly than we have ever done before. Since the Biological Survey began its predatory-animal work our employees and those of our cooperators have taken the skins of more than 130,000 predatory animals and have probably poisoned about as many more coyotes.

Mr. ANDERSON. It seems to me that trapping would be an exceedingly expensive method of getting rid of these pests.

Dr. NELSON. It is, but in the case of some of the animals it is the only way to get them. Some of those animals are old fellows that have had long experience. They have defied all the efforts of the local people and have preyed upon the stock on certain ranges for many years. Some of those animals have certain deformities in their feet so that they may be identified from their tracks, and in this way the stock they kill is known. Some of those animals have taken as high as ten or fifteen thousand dollars worth of live stock. Bounties running up to \$500 have been offered for many of them, but the bounty hunters failed to get them.

The trouble with the bounty hunter is that when he has worked for a month or six weeks after such an animal and fails in his efforts, he is likely to quit. When we put a man in after one of those specially destructive animals, we tell him to stay there until he gets him. It may take as long as three months, but he is killing an animal that is killing, perhaps, two or three thousand dollars worth or more of stock every year. We have had experiences of that kind in Wyoming, in New Mexico, and in various parts of the West. A notable recent case was in Wyoming.

Mr. ANDERSON. I suppose it is alright, but this always seemed to me a very strange business for the Government to be engaged in.

Dr. NELSON. The live stock on the Government range is being preyed upon by these destructive animals. In the national forests the Government charges rental for use of the land. If something is not done to reduce the number of predatory animals, those lands will not be profitable, because the predatory animals will clean up the live stock and put the stockgrowers out of business.

Mr. ANDERSON. Is all of this work done on the national range?

Dr. NELSON. We do most of our work on the Government lands. It may interest the committee to know that the Governments of Canada, South Africa, and Australia have asked us to give them information in connection with their problems of suppressing such predatory animals, respectively, as wolves and coyotes, jackals, and the dingo, or wild dog. We have trained men, who act like foremen or experts and show the stockmen how to do the work. By this means we get much volunteer work done on the Government range. We probably get enough in the way of volunteer services to almost double the effectiveness of the appropriation.

Mr. BYRNES. This expenditure, then, should be charged up against the department which has charge of the Government range?

Dr. NELSON. It really does not make any special difference.

Mr. BYRNES. It makes this difference: One bureau will come in and make a splendid showing as to what it is doing with a small expenditure, but, as a matter of fact, when we get through finding out the various expenditures that are contributing to that particular service we find that it is a very expensive one.

Dr. NELSON. Judging from the estimates of the destructiveness of those predatory animals that we have killed, the annual saving in live stock through our activities amounts to somewhere in the neighborhood of five or six million dollars. For instance, in the case of the State of New Mexico, when we began work there a careful survey was made, and it was estimated that there were about 400 big gray or timber wolves living off the live stock in the State. Recently we could locate less than 12, and our hunters are steadily reducing this number. Practically all the wolves that now occur in New Mexico are some that straggle over from Mexico on the south or from Colorado on the north. We are working not only on the forest reserves but all over the public lands. Our success is due not only to the expertness which comes from knowledge of the habits of the animals and long experience but in the persistence of a systematic organized campaign. Before we began one cattle company in western New Mexico reported losses of about \$10,000 a year from wolves and other predatory animals on their range, and we have reduced those losses to almost nothing by the destruction of the wolves.

FOR EXTENDING INVESTIGATIONS OF THE LIFE HABITS, INCLUDING FOOD HABITS, OF INJURIOUS ANIMALS.

Paragraph "d" covers \$10,000 for extending investigations of the life habits, including food habits, of injurious animals, so as to more adequately meet the steadily increasing demand from agricultural and live-stock interests in various sections of the country for information looking to the protection of field and orchard crops, grazing lands, and live stock from the depredations of certain species. We began this work on a small scale two years ago, so it is already under way. It covers the investigation of the habits of rodents in relation to agriculture, and in connection with that investigation we have made some inclosures where the prairie dogs are destroying the range. An area is inclosed to keep the prairie dogs out, and then another area is inclosed for the purpose of keeping live stock out

but permitting the prairie dogs to go in. That is done for the purpose of checking the areas where the prairie dogs go as against the areas where they do not go. As a result we gained some very interesting information as to the difference between the land grazed by the prairie dogs and the land that was protected from them. The situation there will be the same as if the prairie dogs were destroyed. We found that the growth of the forage in many places was tremendous, but after putting the prairie dogs on such areas they would become barren wastes. We have experimented with that again and again and we found after taking the prairie dogs out of an area we would get a growth of grass 3 or 4 feet high.

The difference between the two conditions was conclusively demonstrated. We demonstrated the difference between a situation where the prairie dogs were eliminated and the situation on the same area where the prairie dogs were allowed to run upon it. We wish to carry on that work in different parts of the country, making demonstrations to the people and awakening them with a view to getting them to take hold of it and assist in cleaning up those pests. The loss from the rodent pest is a very heavy one. It probably amounts to in the neighborhood of \$300,000,000 a year. The Western States are putting up money or are appropriating money, and individuals are putting it up. That has amounted to over \$800,000 this last year.

Mr. ANDERSON. For rodent work or predatory-animal work?

Dr. NELSON. For predatory-animal work over \$300,000 and for rodent work over \$800,000. That, I think, affords a good idea of the practical value of the work, since the legislatures would not be appropriating money and the counties and individuals would not be putting it up without a thorough demonstration of its usefulness.

Mr. ANDERSON. If that is true, why is it necessary to do any more in the way of demonstration work if the people are already interested in it?

Dr. NELSON. It is necessary in order to teach them the need of vigorously maintaining State-wide campaigns for the complete suppression of these serious pests. There is no question from what we have learned that rodents have a much greater influence on vegetation than is generally understood.

Mr. ANDERSON. Is there any particular advantage to the farmer in knowing how many tons of hay he may cut from a place where there are no rodents and how much he may cut from a place where there are rodents?

Dr. NELSON. It is certainly an important matter of practical knowledge, and the people will appreciate it if it can be definitely demonstrated. There are other rodents also to be investigated which feed upon vegetation but of which we have little knowledge concerning their economic relations. We desire to carry on our investigations to determine what the relations of those various animals are to the growth of forage and crop plants as well as to forest trees. Some are believed to seriously affect reforestation in the arid regions.

FOR DESTROYING INJURIOUS RODENTS ON FEDERAL LANDS.

Paragraph "e" carries \$78,165 for destroying injurious rodents. I have already explained some of the needs of this work. During last year the Biological Survey treated or cleared of the most of the

rodents 862,455 acres of Government land, and went over for the second time 503,042 acres. In addition cooperative work on private lands poisoned the rodents for the first time on more than 18,000,000 acres, and in follow-up work covered more than 14,000,000 acres. When we go over a piece of land the first time we usually kill from 80 per cent to 95 per cent of the prairie dogs or other rodents. To complete the job requires follow-up treatments.

Mr. ANDERSON. What do you mean by follow-up treatments? Is that to kill the ones you missed the first time?

Dr. NELSON. Yes, sir. These animals breed so rapidly that if you do not do that your work is wasted. We kill off anywhere from 80 to 95 per cent of them the first time, and then for one or more following years we come back to kill the remaining ones. In that way we finally completely eliminate them. We are getting them out so that they will soon be gone forever from many large tracts. Eventually, the outcome of this work will be to exterminate the worst of these pests over vast areas. It is a big job, because there are several hundred million acres of land infested by these rodents, but eventually they will be eliminated from a large part of the area that they now occupy. Of course, that will eliminate the enormous losses they are now causing.

Mr. ANDERSON. By the time the Bureau of Entomology has destroyed all the injurious insects, and the Bureau of Plant Industry has found a cure for all the plant diseases, and you have killed all the rodents and predatory animals, we will have the millennium with us.

Dr. NELSON. Well, we are doing a work that will be beneficial to the farmers. Here [indicating] is a cornfield that the jack rabbits have taken care of in Idaho. They come in from Government land, and that is what the people in the West complain about. They say that the unoccupied Government land out there is a breeding place for these pests. When a man gets a crop growing, the jack rabbits like the juicy growth and center into it from all directions. In several places in Utah, Nevada, Idaho, Colorado, and other places in the West, farmers have been ruined by these pests and have been compelled actually to abandon their homesteads. A farmer with a small amount of money locates a farming ranch and gets his place started; then, when his first crop is growing, these pests come in and clean him up. The result is that farmer must leave. This photograph shows some poisoned rabbits [indicating] in an area that they have cleaned of all vegetation. We put in poison and killed a large number of them. In Idaho we killed over 80,000 rabbits last year by poisoning and other methods. You can appreciate the fact that 80,000 jack rabbits can do a great deal of damage to growing crops. In eastern Oregon we are running a campaign now. The jack rabbits are destroying things on a great scale there.

In one place in northern Arizona 1,600 prairie dogs were poisoned at a cost of \$9.71. Those prairie dogs occupied a little valley of about 320 acres, which was almost as bare of vegetation as this floor, but a year after they were poisoned they grew a fine crop of wheat on the same ground. Another place that we cleaned up was in the mountains of New Mexico. It was a fine potato-growing locality, but the prairie dogs were so abundant that the year before

we went in there only 40 tons of potatoes were produced. The year following, after we had cleaned out the prairie dogs, they produced 600 tons of potatoes. Those are examples of the direct and prompt results from the elimination of such rodent pests.

Mr. ANDERSON. Is it necessary to conduct those experiments or demonstrations in every section of the country, or is it necessary to send a man out to show how these things are done? Is it not possible to do it in some other way?

Dr. NELSON. I do not know of any other way. We have often turned over our methods to be handled by the people, and then have found that through some failure to follow the instructions strictly and absolutely they do not get the results. Then they immediately become discouraged. We have had that to happen over and over again.

Mr. BYRNES. I can not understand that, because if a man has sense enough to make a success of his farm he ought to have as much sense as a man employed by the department and who is sent to show him how the work is done. Suppose the man employed by the department should die.

Dr. NELSON. We are training new men all the time, and it is their business to do it exactly right.

Mr. BYRNES. Well, these men teach the farmer how to do it.

Dr. NELSON. The difficulty we have is to get people to follow out the details. They become careless about it, and sometimes even the men that we hire will not follow their instructions and fail to get results until corrected. The only way to get efficient work of this kind is to have a trained force of men keep a check on the operations. We are getting a large amount of cooperation, and, while we are spending something like \$100,000 on the rodent work, the States are spending over \$800,000, or they did that this last year in cooperative work. This thing was started by us, and the methods were developed by us. They have been convinced of the effectiveness of our methods, and they join us on a wholesale scale. More than 132,000 farmers worked in cooperation with us last year. The demand for our work in different parts of the West is very great, and they are urging us to help them in many more places than our funds permit. Representative Raker, of California, called our attention a day or two ago to a locality in northern California where the rodent pests have come in from the public lands and have been doing enormous damage to the crops. He urged that something be done by us to help relieve the situation.

Mr. HENDERSON. There is one other point, and that is that it is only through cooperation on a large scale that we can do anything against the rodents. Individual effort would not get the farmer anywhere. There must be an organization of the people in the neighborhood, combined with the Government, if the work is to be effective. If all the lands in the area are not treated at the same time the effort is practically wasted.

Dr. NELSON. What we are doing is simply serving as a means of educational guidance for the people. We organize them for this work.

Mr. ANDERSON. This \$78,165 is to increase the work that you are doing?

FOR THE DESTRUCTION OF PREDATORY ANIMALS.

Dr. NELSON. Yes, sir; that is on rodents. We have asked that on account of the very serious pressure we are under from all directions, and the same thing, I might say, is true of the increase asked for the destruction of predatory animals.

Mr. ANDERSON. It is not contemplated to start any new activity?

Dr. NELSON. No, sir; it is simply for continuing work that we are now doing on those lines.

Mr. ANDERSON. Referring to the tabulated statement here, you show an increase in wages of \$60,000. You employ out of this the men who carry out this work?

Dr. NELSON. Yes, sir. We hire a large number of men to do the poison work. We have had to increase our wages, and the cost of our material has been very much increased. As you know, the general expense of conducting any kind of operations is very much higher than it was a few years ago. The cost of our material is higher also. We buy grain in great quantities, and strychnine and saccharine and various other things, for all of which we have to pay a higher price. In the matter of strychnine, we help the farmers in another way in connection with this work. We secured a contract with the manufacturers of strychnine. Then we arranged it so that the States and people that are carrying on this work can bunch their orders and send them through the county agent or some other local officer who will be responsible. When the order is sent to us by the local official, we transmit it to the manufacturer with whom we have a contract, and in that way the people get the benefit of the Government price. The saving to the people of Idaho last year was over \$20,000 on that one item. Instead of the farmers having to pay the local retail price, they get advantage of our large contract price.

Mr. ANDERSON. What is your next item?

BIOLOGICAL INVESTIGATIONS.

Dr. NELSON. For biological investigations an increase of \$15,000 is asked. That is for the more technical scientific investigations of birds and wild animals. For several years we have not asked for any increase for our scientific investigations but have tried to economize in this activity while the appropriations for our economic activities have grown rapidly.

Now we are in a situation where we are so exceedingly cramped that our scientific field work is almost at a standstill. These investigations have furnished the foundation of the useful economic work we are doing and there is urgent need for more funds to conduct them.

FOR THE INVESTIGATION AND PROTECTION OF GAME ANIMALS.

One of the needed investigations relates to large game. There has been much controversy in the West between the stockmen and the sportsmen as to whether game should continue to be maintained in considerable numbers on the national forests. Many stockmen think that any food eaten by game must be that much taken away from the live stock. There has been no definite study made of the food

of large game animals sufficient to determine what proportion of their food is really forage that live stock would use. Furthermore, we need a close study as to whether the localities inhabited by the game are mainly situations that would be grazed over by live stock. For several years the Forest Service has been urging the Biological Survey to take up these investigations, but lack of funds has prevented. The matter of game conservation on the national forests is a practical problem of the Forest Service, as it is helping to administer the game laws and would like to see the game increase if practicable. The controversy with the stockmen and the final understanding on an enlightened general policy of game production on the national forests can be determined only when such information is available.

We began these investigations several years ago, but have been unable to push them from lack of funds. The work done indicates the strong probability that a very large amount of game could be maintained on the national forests without seriously interfering with the live-stock industry, in fact, that the western forests could be made to produce perhaps 100,000 more deer than now practically without interfering with the live-stock industry. What we desire to do with \$5,000 of this item is to get one or two competent experts and have them make the needed investigations. This is scientific work such as has been conducted for years by the Biological Survey and the results would be of practical use not only to the Forest Service but to all the States in their game-conservation work.

FOR BIOLOGICAL SURVEYS OF STATES AND TERRITORIES.

The other part of "b" \$10,000 is for biological surveys of States and Territories. This is a study of the distribution and habits of the wild birds and animals of the different States. We have been doing that for a good many years, and have completed the work in a number of States and have it nearly completed in Arizona, Washington, Montana, and Florida, and we desire to be able to carry the work to completion in those States and get the results published.

These surveys of the wild life of the States are useful in many ways. They help us in our practical work of controlling the injurious birds and animals and to increase the useful ones, and in other ways. They are useful also to the States in making their laws for the protection of useful birds and animals and for educational purposes.

Mr. ANDERSON. How are the surveys made?

Dr. NELSON. We send men into the field who traverse the different parts of a State and collect specimens of the different birds and animals, observe their habits, and learn all about them, as far as they can in the time they are in each locality. They visit all the different types of country in the State and keep field notes and prepare reports and maps on the results. The final result is the publication of reports on the birds and mammals of the State, with a map in colors showing the climatic or life zones of the State as indicated by the birds, animals, and principal plants. That part of the biological survey work is highly appreciated throughout the world and is considered to be very useful and of great educational value.

We felt that we could hold up our technical, scientific activity temporarily, and we have done so, but we are in the situation now where we are seriously embarrassed unless we can continue our investigations, and we can not do that unless we get a little more money.

Mr. ANDERSON. Take up the next item.

FOR ALL NECESSARY EXPENSES FOR ENFORCING THE PROVISIONS OF THE
MIGRATORY-BIRD TREATY ACT.

TO PROVIDE ADEQUATE WARDEN SERVICE TO ENFORCE THE MIGRATORY-BIRD TREATY
ACT.

Dr. NELSON. The next item is No. 31, for the administration of the migratory-bird treaty act; there is an actual increase of \$63,880. We are under the present appropriation able to maintain only 29 wardens to administer the law throughout the United States, 48 States and Alaska. That is a pretty thin number wardens to enforce a game law over such a vast area. For instance, New York has 143, Pennsylvania 100, California 95, Illinois 73, Louisiana 30 to 35, and Massachusetts 29 to enforce the State game laws. Massachusetts has just the number that we are maintaining for the entire United States.

Mr. BYRNES. You do not expect to duplicate the action of the State officials in that matter; you should cooperate with the States.

Dr. NELSON. We are cooperating with the States; that is, the States are cooperating with us; but the States are not going to do the Government's work.

Mr. BYRNES. What you want to do is to have as many wardens as all the States together have?

Dr. NELSON. No, sir; but we do want a reasonable number. For instance, 29 for 48 States—if you could see the reports of violations that are coming in to us all the time and the demands made for us to enforce the law from all parts of the United States you would appreciate that the 29 wardens have a pretty busy life.

Mr. BYRNES. You can not hope to do that; you can only hope to do it with the cooperation of the State officials?

Dr. NELSON. As some of the States have said, we can not expect them to do the Government's work. They will cooperate.

Mr. BYRNES. The more men you have the more dependent they will always be upon you.

Dr. NELSON. But it is a Federal law that we are enforcing.

Mr. BYRNES. So is the prohibition law a Federal law, and the more prohibition officials that they appoint in the States the more dependent the State and county officials are upon the Government of the United States, and the disposition is to turn it all over to Uncle Sam.

Dr. NELSON. We merely desire a reasonable number of wardens. We have not the slightest desire to go out and rival the States. We certainly should have a man to a whole State. To secure the cooperation of the State you have to have a representative in there to work with the State officials. We are very seriously embarrassed, for instance, now, and we have just brought a man from Wisconsin and sent him down to Currituck, in North Carolina, because we did not have a man available nearer.

Mr. ANDERSON. You took a man from Wisconsin?

Dr. NELSON. Yes, sir.

Mr. ANDERSON. He would not have very much to do there now?

Dr. NELSON. There is always plenty for him to do.

Mr. ANDERSON. You do not need one in Rhode Island and one in Connecticut?

Dr. NELSON. We certainly need a man in the big States. We are in a tremendously embarrassed position on account of the fact that we have so few wardens.

Mr. HENDERSON. We utilize northern men in the South in the winter time.

Mr. BYRNES. I have been reading your note, and even if we should make the appropriation you did not then propose to send a man to each State, you proposed to create eight districts and assign some additional men to the larger States?

Dr. NELSON. No; by referring to the note you will see that we propose to divide the country into three districts, with a supervising warden for each, and to place eight new wardens in States which now have none. Of course, we try to locate our men where the most hunting is done.

Mr. BYRNES. That is what I imagine you would do.

Dr. NELSON. But take one man to a State—Rhode Island does not necessarily have to have a man, or Delaware—but take the ordinary larger size States, one man can certainly find an abundance of work.

Mr. BYRNES. But you do not propose to do that under your item. You say in your note that you propose to establish three districts and to assign several men to the larger States; you do not propose to send one man to each State?

Dr. NELSON. No; three districts with supervisory wardens, and eight new wardens are to be assigned each to a State.

Mr. BYRNES. That is what you propose in the note, to have three districts, and to put a supervisor in each district and to have some men under him?

Dr. NELSON. Yes, sir; three districts and eight wardens in new States.

Mr. BYRNES. The argument you made is that you wanted one for each State?

Dr. NELSON. Yes; we ought eventually to have that, but I am not asking for that for the entire country now.

Mr. BYRNES. If that is what you ought to have why build up a different organization? If you ever get the supervisors in these districts you will not get rid of them.

Dr. NELSON. We do not plan to build up a different organization; these three supervising wardens will report directly to the Washington office and their duties will be to increase the coordination and effectiveness of the warden service in their districts.

Mr. BYRNES. Can you not have supervision from here?

Dr. NELSON. Not very well, as we lack the necessary men. We know from our experience in the work that we can get much increased efficiency if we have a few competent field men visiting and working temporarily with the wardens in the States to increase the effectiveness of their work. For this purpose we would use our best men to keep the work throughout the country up to a high standard. The

wardens often need guidance as to methods and the supervisory service planned will be a great help to them.

Mr. BYRNES. You must not assume that the man selected by the State is not doing efficient work.

Dr. NELSON. I am not passing judgment on the State men at all. I am simply talking about our men. We need the supervisor in order to have the work conducted in the most efficient way.

Mr. ANDERSON. Under this plan you will have three districts, and you will have how many wardens in each district?

Dr. NELSON. That would depend on the district, but they would probably vary from 10 to 15 full salaried Federal wardens and a considerably larger number of deputies on part time.

Mr. ANDERSON. You have 29 now. That is about 10 men in a district.

Dr. NELSON. The supervising warden would do much regular warden service at times. He would act as a regular warden part of the time and part of the time he would be supervising the work of others. There would be only three men doing this. That is all we would have under this appropriation.

Mr. BYRNES. To see that the work was carried on more effectively?

Dr. NELSON. Yes, sir; in addition to our fully paid wardens. We have a system of deputies in every State, a certain number who are assigned from the State warden service to cooperate with us.

Mr. BYRNES. If you had some big organization, then there might be some argument for this decentralization. Where you have not even now one man to a State, I can see no reason at all for establishing districts and to create the supervisors. The other plan would seem far more practicable, to assign a man to those States where it is necessary to have the work done, although you could cooperate with the local officials and have those representatives in the various States do work under your office here?

Dr. NELSON. It is not planned to set up any decentralized organization. These supervising wardens will represent the Washington office in its control of the field force. We have had much experience in this work now and we believe that we can get more efficient service in that way. These head wardens would not be merely inspectors but they would be actual wardens themselves and simply utilize as much of their time as necessary in keeping the other men up to the mark and in getting better coordination of the work in neighboring States.

For instance, we are doing a job at Currituck Sound now which involves the use of several wardens under direction of one man. We send a party of wardens into a district where wholesale violations are occurring under the control of one man. The supervising wardens would naturally be the men to lead such operations.

Mr. HENDERSON. There is one point which Dr. Nelson has not made about our cooperation with the States. We have many deputy wardens in every State besides the regular wardens. Their services are cooperative. In most cases they are deputy State game wardens selected with the approval of the State game commissioner. They are paid a dollar a year and \$3.50 a day when actually employed in our work. The most of the time they do State work exclusively, but we have them available when the occasion arises. We have this cooperation with most of the State game commissions of the country. While we

have only 29 wardens we have several hundred of these deputies ready to serve at any time. We frequently find it necessary to send several wardens into a limited district and to put on 10 or 15 deputies there. Of course, we must select somebody to be in charge of such work, and would use one of the inspectors.

Dr. NELSON. The results of the migratory treaty act have been very surprising. You are from a ducking State, Mr. Chairman. Are you aware of the increase in migratory birds?

Mr. ANDERSON. I know from general impression that the condition is very much better since the migratory treaty was put into effect, although this last year in certain localities it has not been as good as in the year before.

Dr. NELSON. I have here from your State, Mr. Chairman, the report of the State game warden, which is perfectly amazing to me. In 1919 the reports made by sportsmen to the State game warden indicated a total of 2,058,000 ducks killed that year in Minnesota.

Mr. ANDERSON. Nineteen hundred and nineteen was an extraordinary year.

Dr. NELSON. That means at least \$1,500,000 worth of food, and is a good indication of what this migratory treaty act has brought about, as everyone admits that there has been a great increase of wild fowl under it. We get similar letters to that effect from all parts of the country. The birds have increased tremendously, and the increase means a very big aggregate return to the country.

Mr. BYRNES. That is the general report?

Dr. NELSON. Yes, sir. The scarcity of wardens to enforce the law, however, is a serious matter. The States can not do the work, since State money can not be spent to enforce a Federal law any more than we can spend Federal money to enforce State laws. The game departments in most of the States are doing what they can to aid us by friendly cooperation.

Mr. ANDERSON. Is it not a fact that the State laws in most States, so far as the seasons go, the time that hunting can be legally done corresponds with your migratory-bird law; so that if they enforce one law they enforce the other?

Dr. NELSON. To a certain extent; but the migratory-bird treaty was negotiated by the United States at the request of the sportsmen and backed by State game commissions, owing to the fact that without Federal help the migratory game birds were diminishing rapidly and were in danger of extermination.

Mr. BYRNES. That was to make it uniform?

Dr. NELSON. Yes, sir; to bring about greater uniformity and concerted action. The Federal laws are helpful to the States in enforcing their laws, if the Federal laws are being enforced. If the Federal law is being enforced the illegal hunter dislikes to be brought into the Federal court. In many cases when the State wardens capture a violator of the law who proposes to fight his case, he will promptly plead guilty in the State court if given the alternative of going to the Federal court. But this effect can be had only if the Federal law is represented by wardens to enforce it, and the presence of Federal wardens has a very deterrent effect on would-be violators of the game law. The illegal hunters in many parts of the country are learning, however, that our wardens are very few and widely

scattered, and as a result the increased number of complaints coming in show a rapid increase in the violations of the Federal law. This will continue until we can get men enough to more adequately cover the country. We have had requests from all directions to stop violations of the law, many of which we are helpless to meet as we have not men enough. A large part of these increased number of violations are due to the feeling of the poachers that we will have no wardens in their section. For that reason we are extremely desirous of having a little more money to enable us to do the work more effectively. That will help to increase the birds for legitimate hunting. Practically everyone admits that the migratory-bird treaty act is one of the most successful conservation laws ever passed. Its effect has become evident, and many who very bitterly opposed it in the beginning are now thoroughly approving of it; they have seen the evidence of its success.

Mr. ANDERSON. Take up the next item.

FOR INVESTIGATIONS, ETC., OF THE WELFARE OF THE REINDEER INDUSTRY
IN ALASKA.

Dr. NELSON. The next item, No. 32, for investigations, experiments, and demonstrations for the welfare, improvement, and increase of the reindeer industry in Alaska, including the erection of necessary buildings and other structures, and cooperation with the Bureau of Education and for the enforcement of section 1956 of the Revised Statutes as amended, so far as it relates to the protection of land fur-bearing animals in Alaska.

There are now in the neighborhood of 200,000 reindeer in Alaska, of which about three-fourths belong to the natives and about one-fourth belongs to the Government under the Bureau of Education, and to white owners, the main white owners being Lomen & Co. and Mr. Lindeburg, who is associated with the Lomens. They have started a commercial industry in reindeer growing for meat. They exported this year about 1,600 head to Seattle. They have established four small cold-storage plants at points on the coast of Alaska, where the reindeer herds can readily be driven down for slaughter to be refrigerated and loaded for shipment to Seattle. I have recently been studying the Alaskan possibilities in the reindeer industry when well developed. I believe Alaska contains available range to maintain from four to five million reindeer. The estimate has been made that it would take care of 10,000,000, but I think this is too high a figure.

Mr. ANDERSON. I have heard it estimated as high as 12,000,000.

Dr. NELSON. I do not think it will support so many. I think four or five million is a more reasonable estimate. That will give an output of about a million and a quarter reindeer a year. A reindeer carcass dressed for market now averages about 150 pounds. Taking this weight and the present value of reindeer meat and the fully developed reindeer industry in Alaska should yield approximately \$43,000,000 a year. Reindeer have been in Alaska 28 years and their increase under the crude methods of handling them in practice has been almost startling. Under proper scientific supervision as to diseases, parasites, and modern methods of live-stock management, the industry should develop very rapidly. A large part of the herd

owners have been killing the big old bulls because they are fighters and troublesome, and have been maintaining the younger and less energetic bulls for breeding purposes. No weeding out of scrubby stock—male or female—has been practiced, and the result has been to gradually grade down the stock.

Mr. ANDERSON. I understand there is a possibility of cross-breeding?

Dr. NELSON. Yes, sir. We have an expert up there now investigating the wild caribou herds of Alaska. There are big herds of caribou in the interior on the headwaters of the Kuskokwim River, about the Mount McKinley region, and elsewhere are large woodland caribou, some of the bulls of which are reported to dress up to about 400 pounds each. We plan to locate and capture some bulls of this stock and use them with one or two experimental herds of reindeer cows for the purpose of building up a higher grade of reindeer, having greater weight and increased hardiness. I believe it will be practicable in less than 10 years to have the reindeer of Alaska running from 250 to 300 pounds to the carcass, instead of 150 pounds as at present. Suppose you add 100 pounds to the weight of each reindeer steer for slaughter, you would have increased the value of the fully developed Alaska reindeer industry enough to bring the potential output around \$60,000,000 at present values. That is more than the fisheries of Alaska produce.

Mr. ANDERSON. What is the character of work being carried on by the Bureau of Education?

Dr. NELSON. The reindeer were introduced into Alaska through the Bureau of Education for the benefit of the Eskimos, and the great increase in the number has been under its direction. The Bureau of Education, however, has not taken up the matter of a scientific investigation of the diseases and parasites of the animals and a study of grazing problems connected with the industry. The demand for this has come with the development of commercial herds owned by white men. The number of reindeer now existing in Alaska need prompt study of the situation to help prevent the outbreak of contagious diseases which might result in a disaster of great consequence to the herd owners and the industry. Last winter an appropriation was made for the Biological Survey to take up the necessary investigations, and in July I went up there, taking with me an expert veterinarian and parasitologist who at the time he was employed was chief parasitologist of the Canadian Government in Ottawa. I also got the best range expert I could find in the Forest Service to study the forage and range conditions relating to the grazing of the reindeer. Each of these men has a trained assistant. The reindeer experiment station was located by me at Unalakleet, a place on the coast of Bering Sea about 125 miles north of the mouth of the Yukon River and 80 miles east of Nome. That place is in the midst of reindeer herds. These experts have been making investigations and have already found that certain simple changes in the methods of handling the reindeer herds will be of great benefit in reducing losses and producing better stock. Up to the present time the industry has lacked the guidance of trained specialists, such as have so greatly benefited the stock industry in this country. Our men have found some reindeer which have been grazed on the same

area for about 10 years, with the result that it has become very seriously infested with parasites of five or six different kinds, and this reindeer herd is badly infested with them, whereas reindeer herds grazing by themselves over a distant and freer range are practically free from parasites.

Right there is a practical fact that these people did not know before. Our aim is to work out methods of handling the herds which will prevent their becoming infected with parasites and learning what parasites they are troubled with to determine methods of eliminating them. At the same time the grazing experts are studying the range, and they are trying to determine the grazing unit; that is, to learn how much land under the forage conditions of that range one reindeer needs to maintain it a year. As soon as that can be determined, we have the information from which to work out a system of allotments of territory to the owners of different herds. At present some of the herds are interfering with one another, and this trouble will increase if the present disorganized conditions continue long. One of the serious troubles now is the passing from one herd to another of stray animals and consequent losses to owners. There is much complaint about this, and as the white men go into this business something must be done to protect not only their interests but the interests of the natives. The natives own 150,000 reindeer, which will increase rapidly, and their interests should be safeguarded. Through this industry they can be made self-supporting, and it is the one resource open to them for this purpose. The Government, of course, should see that they are not deprived of their property, and yet the only way eventually to prevent that would be to have a system of allotment of grazing areas and see that the herds are kept on them along the general lines of the allotting of grazing lands on the national forests. This, I think, will be perfectly feasible. Mr. Lomen, whom I hope will be here later, is one of the main white owners of reindeer and is very highly pleased with the work we are doing up there and fully appreciates its value. He was out in the field with our two experts for a time last summer. They were at one of his camps, and he saw what they were doing and has learned what they have accomplished since then. Stefansson, the Arctic explorer, was here yesterday. He is interested in the lease granted by the Canadian Government for a great area for reindeer grazing in Baffins Bay. He informed me that he has learned that in the Scandinavian countries of Europe about 200,000 reindeer are killed for meat each year.

Mr. ANDERSON. They have reached the limit of their capacity for maintaining them in Norway and Sweden, if I remember correctly?

Dr. NELSON. Yes; and he says that in Stockholm beef sold last year at 5 Swedish crowns a kilo, mutton at 5½ crowns, and reindeer meat at 6 crowns. Reindeer was the highest-priced meat on the market.

We need more money to put more expert field men into that work in Alaska, because these investigations should have been started five years ago and now should be expedited. These Arctic lands are useless for any other purpose, and their utilization is a new series of live-stock problems. Over great areas they grow a tremendous forage crop. I was back of Nome and saw forage was growing in

a matted mass of grass and other plants, 2 and 3 feet high. There is an abundance of forage there to be utilized by the reindeer. A rapid survey of the country to determine the area suitable for reindeer and its camping capacity will be of prime importance in developing the industry. At the same time the proper methods of handling the herds must be worked out. Interest in this industry will develop, and it will be of the greatest value to the future of Alaska. As a matter of fact, it appears to be the one great outstanding opportunity for new development in the near future in northern Alaska. The present 200,000 reindeer in Alaska, in addition to tens of thousands killed for meat, all came during the last 28 years from an original importation of 1,280 animals. The increase is almost unbelievable. People have asked me what the future of the industry is likely to be, and I have replied by asking them the question, "If 1,280 reindeer in 28 years produced the present 200,000 animals, what is likely to be the increase from 200,000 animals in the next 28 years?" In other words, the industry, properly handled, should have a great future.

Mr. ANDERSON. Now, let us get right down to brass tacks. You are proposing \$6,000 for establishing two experimental reindeer herds. What is the necessity for those experimental herds?

Dr. NELSON. The necessity is to start in to prove the practical possibility of grading up by the use of caribou and by the selection of breeding stock to demonstrate as quickly as possible the practical fact that all those reindeer herds of Alaska can be put up to 250 or 300 pounds apiece from 150 pounds; in other words, add many million dollars to the value of the industry by a comparatively simple experiment at small cost.

Mr. ANDERSON. Are you going to carry on two different experiments, and is that the reason why you need two herds?

Dr. NELSON. I would like to carry it on with two herds.

Mr. BYRNES. This man who is up there in the business has not attempted such an experiment at all?

Dr. NELSON. No.

Mr. BYRNES. Why has he not attempted it if he is in the business?

Dr. NELSON. They can not afford to do it. I have a man spending a year in the caribou country trying to locate where we can best get the caribou bulls and how it is practicable to get them. Then we must arrange to capture and transport them to the coast, hundreds of miles from the interior. It is quite an undertaking and is not a simple matter. The Lomen Co. will cooperate, but can not afford to make experiments of this kind. This appears to me to be a legitimate governmental activity. We are talking about helping build up Alaska, and here is one thing that is right in sight to-day, a fine, big industry for Alaska, and I do not know of any other like it in the immediate future.

Mr. BYRNES. Is the Lomen family the only people engaged in this business?

Dr. NELSON. The Lomen family and their associate, Mr. Lindeburg, who is one of the stockholders in their company and also has reindeer of his own, are the principal white owners. They form the pioneer white American reindeer operators on a commercial scale up there. Some of the men living in the country have small herds, but the

Lomen Co. has established four refrigerator plants on the coast and are developing the industry on a commercial scale. They are pioneers in it and are taking all the chances. They have been shipping down carcasses in consignments of a few hundred and distributing them over the country to build up a market. Even though their ultimate purpose is to make money, I believe they are also public spirited in their desire to help develop a new resource for Alaska.

Mr. BYRNES. I was just going to say that they are not doing it entirely through public spirit. They are doing it because they hope to make money out of it, like any other man who goes into a business.

Dr. NELSON. Yes; at the same time they are doing a real public service, because what they do will be for the benefit of the whole future of the industry.

Mr. BYRNES. Of course, any man who engages in business, if it is a productive business, and takes chances and becomes successful, is doing some good for the country.

Dr. NELSON. Yes; but here they are starting in to a new thing and they have many things to contend with, including the building up of a market here.

Mr. ANDERSON. You propose to establish one of these stations somewhere up near the Government railroad at Fairbanks. I do not know, but it seems to me that is several hundred miles from this reindeer country.

Dr. NELSON. There is an available area in there, but I would not put an experimental herd there now. The estimate was submitted while I was in Alaska. I would put the experimental herds nearer the coast.

Mr. ANDERSON. That looks more reasonable to me.

Dr. NELSON. There are great numbers of caribou in the interior, especially east of Fairbanks, but it has not been determined that it would be advisable to put reindeer in there at present. It is now a wild caribou country. In this connection I might tell the committee that from information obtained from a considerable number of people in the Fairbanks region I estimate there must be somewhere from 200,000 to 400,000 caribou in the country east of Fairbanks. The wild caribou is the same kind of animal as the reindeer except it is wild instead of being domesticated, and it is from the wild animals we expect to get the larger breeding stock. In order to travel freely along the coast to visit the reindeer herds located over hundreds of miles of territory our experts must have a sea-worthy boat, otherwise they are practically tied down to one place in the summer unless by accident they get an opportunity of going on the small boat of some trader or Eskimo.

They should visit all the different reindeer herds all along the coast and size up the country and get an idea of what its reindeer-carrying resources are. The Government should have first-hand information as to the character of the grazing country of that whole coast because already there are scattered reindeer herds for a distance of approximately 3,000 miles along the coast and lower courses of the larger rivers.

Mr. BYRNES. And you can not get any information as to the character of the country?

Dr. NELSON. No such detailed information as a grazing expert needs, any more than you could get information from the general

public as to the carrying capacity of the national forests by asking the people there. That is a thing that has to be settled by an expert. They have to learn what plants the reindeer eats. Nobody knows at the present times just what main forage plants the reindeer eats in summer.

Mr. BYRNES. Mr. Lomen does not know that?

Dr. NELSON. He could tell you a few of them, but he could not tell you what the main plant is that the reindeer eats in summer, nor could he give definite information as to the distribution of these plants under varying conditions on thousands of square miles along the coast and back into the adjacent interior.

Mr. BYRNES. He is in the business and lives up there and can not tell you what plants they eat?

Mr. ANDERSON. As I understood, this prospective range covers several thousand square miles.

Dr. NELSON. Yes; tens of thousands of square miles.

Mr. ANDERSON. The vegetation, of course, in that expanse of territory is not all alike.

Dr. NELSON. It varies very much. There are great barren areas where there is practically nothing. What we have got to work out is the extent and location of the forage producing areas and the character of the vegetation. For instance, here is a sample of problems. Reindeer exist in winter almost wholly on the so-called reindeer moss or lichen. In summer they eat other vegetation, a variety of other vegetation, but just what the main summer food is we do not know. We do know they eat various other plants, but in winter they are dependent almost wholly on reindeer moss. In determining grazing allotments it will be necessary to have them each include sufficient areas of winter grazing or of moss country with the summer ranges. There is an abundance of summer range, a tremendous amount of it, more than will ever be used, because I do not believe there is sufficient moss area to take care of as many animals as the summer range would take care of, so it is a matter of being able to know pretty well what and where those moss areas are and how extensive they are. You will find big areas along the coast where there is practically no moss at all, but when you get back into the interior you will again find moss areas. All that is a part of the information that is absolutely essential to any kind of intelligent handling of the thing and nobody has that knowledge now. That is not a thing that you can ask a man about and have him say, "Yes; I saw some moss over there." You must have an actual reconnaissance and have the areas mapped.

The grazing problems for reindeer in Alaska are in general comparable with those on the national forests where surveys are made of the prevailing vegetation and its forage value as a basis for determining the number of live stock to be grazed on different areas.

The same care must be taken to study and care for the grazing areas for reindeer as for cattle. Examples of overgrazing moss areas show that this essential vegetation can be destroyed so that it will not come back for many years. On the lower Yukon I was told of such an area where for 10 years there has been no sign of that moss coming back. In other words, this area was put out of business for an indefinite period. We should have all those things in

mind in handling the business in the future, a business that has already reached a point where it is vital for the Government to get as much information as it can very promptly in order to properly foster its development. Is there anything further you care for, Mr. Chairman, in reference to this reindeer business?

Mr. ANDERSON. I still do not see the necessity for two herds. I can see why there might be some advantage in it if we had a lot of money to spend, but under present conditions, if it is possible to get along with one herd, I think we ought to try to do so.

Dr. NELSON. I suppose we could. We could certainly get the experiment under way with one herd. I am free to admit that under present conditions it may be best to begin with one herd, but there is urgent need of starting this herd. I think the results will be so beneficial to the industry that it ought not to be delayed.

Mr. ANDERSON. I confess when this thing was first started last year I was not very much impressed with it, but as the testimony developed it looked to me like there was a very great possibility to it and I would like to see a fair try out of it.

Dr. NELSON. I can tell you, Mr. Chairman, that the future looks so promising that the expenditure we are contemplating is trifling compared with what the outcome is likely to be, and base our expectations on past developments. All we have to do is to learn what has taken place in reindeer development in the last 28 years without skilled guidance or help. It has just happened; but the business is not advancing as it should, and furthermore, there is great danger of some contagious disease developing that might almost wipe out the herds. That is one of the dangers to be guarded against. Whenever any large number of animals exist in any region conditions soon become right for the development of contagious disease. That is one of the reasons why we need experts up there—men skilled in animal diseases, to watch for things of that kind and head them off.

Mr. ANDERSON. Take up the next item.

FOR THE PROTECTION OF LAND FUR-BEARING ANIMALS.

Dr. NELSON. The next item is for the protection of land fur-bearing animals. We have a serious situation confronting the fur resources of Alaska. The furs from Alaskan land fur-bearing animals in 1919 produced about \$1,300,000. Several years ago the beaver and the marten had decreased so much that it was found advisable to put a closed season on them which still continues. Owing to the value of both of those skins, to the great extent of country which they occupy, and to the lack of any active warden service there have been wholesale violations of the regulations protecting these animals. A great many of the Alaskans deplore the fact that these animals are being killed illegally, but a certain element among the traders and trappers carry on systematically the catching of both beaver and marten, and are getting the skins out of the country in all manner of underground ways. They are caught now and then and the furs are confiscated, but this illegal traffic is so profitable that it persists. We have only \$15,000 at present to handle the fur warden system and protect the fur-bearing

animals of Alaska. Alaska has such an enormous extent of territory that it is obvious that this sum is almost nothing.

Mr. ANDERSON. Is it not quite as hopeless with \$10,000 more?

Dr. NELSON. No; it is not. For instance, what we want is to be able to put some more men in the main trading and trapping centers. We can accomplish much over considerable territory by having a warden in a trading center and working out from that point. There are certain centers up there where all the people in the surrounding region come, and you can really do a great amount of work by handling it in that way. To handle the situation on \$15,000 is certainly a hopeless task. In addition to the illegal traffic in furs is the wholesale poisoning of fur bearers in some districts. Many of the people in the Territory expressed their condemnation of this destructive method. It is a difficult thing to prevent a man from poisoning the animals. With more funds for wardens we wish to try and lessen this destructive work, especially in view of the importance of the fur bearers up there as a resource on which large numbers of both natives and white men depend for a substantial part of their income. Fur bearers have already been practically destroyed in several considerable districts through poisoning and by digging out foxes. They dig out fox dens hunting for black-fox pups. If a den is dug out only the black pups are taken and the others left to perish, as the old fox deserts the den after it is dug out.

The result is that every time they dig out a den they wipe out that year's litter of pups. That has been done in certain districts until they have about exterminated the foxes. There is real and serious need of some definite work being done to try to head off such reckless destruction and to try to maintain the fur asset in Alaska. It is for that purpose I am seeking for this additional money. I might say that Alaska, as every one, I think, is aware, is going down now in population and industry. The Government is spending an enormous sum in building a railroad up there and should at the same time do something practical to help maintain and build up its resources wherever this is practicable, as in the present case.

FOR GENERAL ADMINISTRATIVE EXPENSES.

The next item is for general administrative expenses. I am asking for \$9,240 increase here, because the bureau needs additional money to meet the calls on it for general services in cooperative work with such other bureaus as the Forest Service, the National Park Service, and others, and to meet the general increase in the cost of supplies and equipment, and all of the items that go to carry on our work. The activities of the bureau have grown rapidly in the last few years and the administrative work has grown with it in order to keep up our efficiency. To meet this urgent need I am asking for this increase.

Mr. ANDERSON. We are very much obliged to you, unless there is something further you want to say.

Dr. NELSON. I have nothing further.

WEDNESDAY, JANUARY 5, 1921.

DIVISION OF ACCOUNTS AND DISBURSEMENTS.

STATEMENT OF MR. A. ZAPPONE, CHIEF OF THE DIVISION OF ACCOUNTS AND DISBURSEMENTS, DEPARTMENT OF AGRICULTURE.

INCREASED PERSONNEL.

Mr. ANDERSON. You can give us a brief explanation of your changes in your statutory roll.

Mr. ZAPPONE. I am asking for three additional clerks—one at \$1,600, one at \$1,400, and one at \$1,200—items 7, 8, and 9. The additional work imposed upon the division by the steady growth of the appropriations of the department makes this additional help necessary. You will notice by an examination of the statement of appropriations for the division, following the statutory roll here, that for the past seven years there has been no increase in the appropriations for the Division of Accounts and Disbursements. On the contrary, there has been a slight decrease through several of the years until the present fiscal year—1921. For this year Congress allowed four additional clerks, but even with this additional help I have been unable to keep the work of the division up to a high point of efficiency without details.

Mr. MAGEE. Are these salaries fixed by statute, by existing law?

Mr. ZAPPONE. The roll I am speaking about for my division?

Mr. MAGEE. Yes.

Mr. ZAPPONE. Yes, sir; they are all statutory places provided by law.

Mr. ANDERSON. I do not think you are entirely accurate about that. Some of those places, of course, are fixed by statutory law; but the places that relate to clerks, for instance, and messengers are not fixed by statutory law, except in a very general way; that is to say, Congress has fixed the grades and the salaries applicable to those grades; but, as I understand it, that does not fix the number of clerks which Congress can appropriate for in those specific grades. There is no law that says you shall have only five clerks of class 3, and so on.

Mr. HARRISON. Mr. Zappone misunderstood you. He means his entire roll is statutory.

Mr. ANDERSON. I know; but I did not want him, in answering the question through a misunderstanding, to get something into the record here that I do not think is entirely correct.

Mr. MAGEE. I am not speaking of numbers; my point is if the salary of the existing clerks is fixed by law, we can not legislate.

Mr. ZAPPONE. I was trying to answer, Mr. Magee. It seems to me, gentlemen, as I understand this roll, Congress does fix the places. These are statutory positions created by Congress. In the case of individual places, you have indicated the title of those positions which we must follow; you have also indicated the salary to apply to those places. In the case of clerks, you have indicated and the

different grade the number of clerks in each grade. The grades are established by statute—clerks of class four, three, two, and one, and such other clerks as may be necessary in the Government service. That is a general statute.

Mr. ANDERSON. I think you are mistaken about that. If you are right about this thing, you are absolutely out of court right now.

Mr. ZAPPONE. I do not mean to set up my remarks against those of the committee, Mr. Anderson, and I am willing to be convinced; but I know of the existence of this general statute. Additional clerks are added from time to time by the head of each department, which is permitted under that statute. Congress appropriates certain moneys and indicates a certain statutory roll. Those are statutory places. They not only name the title of the position but they name the salary and that, I thought, was your question.

To go back to the question of additional clerks, the appropriations of the department have increased very greatly during the period from 1915 to the present time. In 1915 the Agricultural appropriation act carried about \$20,000,000 in round numbers and special appropriations, including permanent appropriations, made the total for the department about \$28,000,000. For 1921 the Agricultural bill carries about \$31,000,000, and the permanent and special appropriations, particularly the big appropriation for road construction, make available a total of about \$142,000,000. I have not asked for additional clerks in years gone by, but have endeavored to get along, and have succeeded fairly well, by a little help given me from time to time by some of the bureaus in the way of details. But I feel that I ought now ask to have my roll brought up to the number that is necessary to efficiently run the office. You allowed me four clerks last year. I would like to have three this year, and I think, gentlemen, I may ask for three next year. I feel they are necessary for the efficient conduct of the work.

Mr. MAGEE. Three additional clerks?

Mr. ZAPPONE. Yes, sir. I am asking for one of class 3, at \$1,600; one of class 2, at \$1,400; and one of class 1, at \$1,200, in items 7, 8, and 9.

Mr. BYRNES. How many men have you detailed to your office to assist?

Mr. ZAPPONE. The number varies at different times. In the summer, around the close of the fiscal year, the work is heaviest, and I have had as many as 10 detailed. During the balance of the year it varies from that down to 6.

Mr. BYRNES. And you think you need seven more clerks; you are asking for four this year and expect to ask for three next office, with the idea that I would eventually need

Mr. ZAPPONE. Six; 3 this year and 3 next. As I stated, I started last year a plan of gradually increasing the force of the office, with the idea that I would eventually need 10 additional clerks to keep pace with the work and assure the prompt payment of accounts.

TUESDAY, JANUARY 4, 1921.

DIVISION OF PUBLICATIONS.

STATEMENTS OF MR. JOHN L. COBBS, CHIEF, DIVISION OF PUBLICATIONS, AND MR. W. A. JUMP, ADMINISTRATIVE ASSISTANT.**PROMOTIONS, ADDITIONAL EMPLOYEES, TRANSFERS FROM STATUTORY ROLLS, ETC.**

Mr. HARRISON. Item No. 1 we will pass over. It will be discussed later by Dr. Ball in his general statement.

Mr. COBBS. In Item No. 2 we are asking for an increase of \$1,500 in the salary of the chief editor of the division. Our reason for asking for that increase is that up until the 1st of December we found it impossible to fill the job for the salary which we have available. The position was filled up until last May, I believe, at which time the incumbent left, and in spite of our efforts we were unable to get anybody else to take it. That promotion I regard as being by far the most important in our estimates. Our editor is in the position of the chief editor of a very large publishing house. He is responsible for the form and style of the department's publications, and, as you know, we have a great many publications of various sorts. The position requires a man who is himself a good writer, who is a good editor, who knows the work of the department, and who has the vision and the practical knowledge to determine the best forms in which the various kinds of information secured by the technical bureaus in their research work can be presented to the people for whom it is intended.

Our department bulletins have to be put up in one way. They are intended for scientific workers. Our farmers' bulletins are written in an entirely different way. They are intended to make plain to the farmers how to put to practical use the methods which the other bureaus work out.

Mr. ANDERSON. This editor does not write anything, does he?

Mr. COBBS. He has to see that the publications are written in the way most suited to the class of people by whom they are going to be used, in such a way that they will do the most good to the people who do use them. And he very often has actually to rewrite parts of the publications to put them in proper shape and to indicate to the authors how the subject should be treated. We regarded that position as so important that Secretary Meredith wrote a personal letter to every agricultural journal in the country, or to all the more prominent ones, and to the agricultural colleges as well, asking their assistance in getting us somebody for that job. He was unable to get anyone at all until the 1st of December, when we found an unusually well qualified man who agreed to take the place temporarily, pending the action of Congress on the increase which we are recommending. If we do not get that increase, gentlemen, we are going to lose him, and, in the light of our past experience, we know that we can not secure a qualified man for less than the \$4,500 we are asking. It is absolutely essential to the proper conduct of our work to keep this place filled with a capable man.

This place is one of four, I think, which affect the key men in our organization. They are the people occupying some of the pivotal positions, around which our organization is built. I am sure you gentlemen, as business men, realize the necessity for getting and keeping strong men in these positions. If we do not get them the work is constantly being torn to pieces, and it is impossible to get good results. Personally, I consider the promotion for this place and for the other three places, which I will explain later, as being the essential points in our estimates. Unless we can get good men in those places and keep them there, the organization is constantly in confusion. During the time the position of chief editor was vacant the work piled up unbelievably, and it just swamped everybody because there was not a man in the proper position to handle it. In addition, some of our publications showed the lack of proper editing and resulted in rather severe criticism of the department. You have got to have men in those pivotal positions who can swing their work and keep things moving. If you do not, somebody has got to try to attend to it, in addition to his own duties, and then nothing gets done right, so I want to urge just as strongly as I can that this place receive the most careful consideration.

Mr. RUBEX. Is that item No. 2?

Mr. COBBS. Yes, sir. That man, as I said, is in the position of a chief editor of a big publishing house, and those places, as you know, pay anywhere from \$5,000 up. The publishing houses that handle a volume of material that is comparable to the material that we put out pay their men in positions comparable to this at least \$5,000, and from there on up.

In item No. 3 we are proposing to drop the title of assistant chief of division, and to substitute item No. 4. One assistant, without change in salary. It is merely a change of title. This change is an administrative one, purely and simply, and is designed to bring into line the various titles in the division. We have had considerable confusion there about the various titles. The person who occupies this position is not assistant chief of the division at all. We are constantly being embarrassed because he has held that title when he is not filling the duties of an assistant chief of division.

Mr. ANDERSON. That is your own fault, if that is true, because last year you had the designation there of one assistant editor, and you asked to have it changed to one assistant chief of division, which was done.

Mr. COBBS. One assistant chief of division?

Mr. ANDERSON. Yes.

Mr. COBBS. I do not understand that, Mr. Anderson.

Mr. HARRISON. I think we asked for the same change last year.

Mr. ANDERSON. I have the book right in front of me.

Mr. HARRISON. You have the appropriation bill before you—not the estimates. My recollection is that we asked last year that this title be changed.

Mr. ANDERSON. Here is what it says: "One assistant chief of division, \$2,500," which was changed to one assistant editor.

Mr. HARRISON. We asked that it be changed to assistant editor, but that was not done.

Mr. ANDERSON. This is stated the other way around to what it usually is, evidently.

Mr. HARRISON. That was not approved, Mr. Chairman.

Mr. RUBEY. You had an assistant chief of division, and asked that it be changed to one assistant editor, and that was not done?

Mr. COBBS. No; it was not done.

Mr. HARRISON. We are asking for the title of "assistant" here. Assistant editor would be satisfactory if you prefer that.

Mr. RUBEY. You are practically asking the same thing this year as you asked last year?

Mr. HARRISON. Yes.

Mr. COBBS. In the next item, No. 5, we are asking for no increase.

In item 6 we are asking for an increase of \$1,000 for the position of assistant in charge of information. This is one of the pivotal, key places I spoke of, and the man who occupies it is in charge of the office of information, being responsible for the publication of the Weekly News Letter and the preparation and the distribution to the press of information relative to the current developments in agriculture. Men in similar positions in outside work receive anywhere from \$5,000 to \$8,000. We have had occasion to get very accurate information about these jobs through our contract with various publishing companies and agricultural journals.

In item 7 there is no change.

In item 8 we propose to change the title of the superintendent of distribution, at \$2,500, to that of assistant in charge of distribution. In all of our places the men at the head of the various branches are designated as "assistants in charge," and we would like to make this change merely to bring the title in line with our present policy. We feel that it is a confusion to have a wide variety of titles that do not mean anything, and the change we ask for there is to bring it in conformity with administrative practice.

Mr. RUBEY. You have first one assistant (submitted), and now you have one assistant in charge of exhibits, one assistant in charge of information, one assistant in charge of motion-picture activities, and so you want to change this to one assistant in charge of distribution?

Mr. COBBS. Yes, sir; to make it in line with all the men in charge of the various branches. There is no change at all in duties, salary, or personnel.

There is no change in item 10.

In item 11 we are asking for an increase of \$500 for the chief clerk. This man is a very efficient employee. He supervises the general business operations of the division, has general supervision of the accounting, clerical, and record work, and the procurement of supplies and equipment. He is thoroughly familiar with the work of the division, and is doing a great deal to put the work on an efficient basis. The salary of this job has remained the same, \$2,000, for some years. We feel that the man who now occupies it is well worth \$2,500 and that he should have it. He has been in the department for a number of years, served overseas in the Army, and is one of the key men about whom I have spoken. He has been on the point of leaving the department because we have not been able to promote him, and we feel that unless we do get a promotion for him we are going to lose him, because he is too valuable a man, too effi-

cient a man, to remain long unnoted by outside people. I have had just recently an inquiry from a large concern which evidently had him under consideration at a salary considerably in excess of what he is receiving now.

There is no change in item 12.

Mr. WASON. Is not that about the salary that is paid in the other departments?

Mr. COBBS. I think that most of the other bureaus pay their chief clerks from \$2,200 to \$2,250 and up. Is not that true?

Mr. HARRISON. They range from \$2,000 up to about \$3,000.

Mr. COBBS. \$2,000 is the minimum salary, I think, for chief clerks, and we feel that this man is well above the average chief clerk.

Mr. WASON. I think from \$2,000 to \$2,250 is the average salary. Here and there some of them have crept in above that.

Mr. COBBS. There is no change in item 12. In item 13 we are asking for one additional assistant at \$2,000, which is recommended in lieu of one assistant in charge of the document section at \$2,000, which is item 37. If you will notice that item, you will see we are dropping it. Under the present organization of the division the document section has been merged with the distribution section, and the present designation of this position is no longer appropriate. We are asking for this one assistant at \$2,000 to replace the man in item 37. It involves only a change in title.

Mr. RUBEY. There is no increase there?

Mr. COBBS. No actual increase. It shows an increase in this item, but we drop one position in item 37 to make up for it.

Mr. ANDERSON. You have one gentleman over here that you designate as one assistant in charge of document section.

Mr. COBBS. Yes; but we want to change his title. This is just in line with the other changes I have spoken of, to bring the various people there into some sort of uniformity. These various titles we have had in the division have been very confusing.

Mr. ANDERSON. But are cutting him and designating him simply as an assistant?

Mr. COBBS. Yes; we have no document section. I think under the old scheme of organization they did have a document section, but that no longer exists, and the term is a misnomer.

Mr. BYRNES. One assistant in charge of distribution?

Mr. COBBS. One assistant in charge of distribution.

Mr. HARRISON. The document section is under his jurisdiction?

Mr. COBBS. Item 14 is the next one. We are asking there for an increase of three positions at \$2,000 each. These three additional assistant editor positions at \$2,000 each are recommended in lieu of the same number of \$1,800 positions in item 15. This change is desired in order to standardize the salaries of the assistant editors, and to recognize the valuable service rendered by the three employees now receiving \$1,800. The work of these employees requires special ability and training, and all of them are well worth the small increase recommended. That provides for a \$200 increase for the three men that are carried in item 15 at \$1,800 at the present time.

Item 16 is the same.

Item 17, one assistant at \$1,600 is a new position. It is submitted in lieu of one of the assistants at \$1,400, carried under item 18 at the present time, in order to provide a small promotion for the employee

having charge of the records incident to the maintenance of the numerous and complex mailing lists of the department in the division of publications and at the Government Printing Office. The responsibilities of this position are exacting and involve the supervision of about 12 employees.

In item 18 we decrease the number at \$1,400 to provide for this place that we ask for in item 17. That man will be promoted to \$1,600, leaving one man at \$1,400.

Item 19 is the same.

Item 20 provides for an increase of \$200 for a man who is now getting \$1,400. We have had difficulty in getting a capable man for this work at \$1,400, and this is to provide a promotion for a man of that class.

In item 21 we are asking for a new position at \$3,000, one information assistant. I would like to say in regard to this position and in regard to the other new positions for which we are asking, that the positions are not intended to enable us to take up any new lines of work at all, but merely to do better the things we are now being called upon to do with an inadequate force. We are finding constantly that the public is demanding a more detailed service than they have ever gotten before. They are demanding a better service. They want better bulletins and better pictures and better illustrations all the way down the line. Consequently we are getting demands for all kinds of information that we can not fill. I suppose there is hardly a day that somebody does not come in with a demand for a popular article on some phase of the work of the department, and we have not got the personnel to prepare them. Those people do not understand that. They think we ought to be able to give them any kind of service they want.

Mr. ANDERSON. I know, but that is always to be expected.

Mr. COBBS. This position of information assistant we want for a man who will specialize in devising posters, circulars, form letters, booklets, and similar material. We have found material of that sort is very effective in handling the campaigns that we have to carry on. For example, we are trying to get out now a poster which we feel we will be able to use very effectively in preventing the spread of the Mexican bean beetles which destroyed the bean crop in parts of Alabama last year. We are handicapped because we haven't got anybody to devise a first-class poster. We need somebody in the department who can handle that sort of work and do it well. As it is now, we have to have it done by several people who are not specialists in that kind of work, and we feel that some of the posters we have to use are not up to the standard that the department ought to issue.

Mr. WASON. How do you expect, if we conclude to adopt your suggestion creating new positions, that we will get by with it? We are an appropriating committee, and it would be subject to a point of order.

Mr. COBBS. We are attempting here, gentlemen, to tell you just what we feel we have got to have to carry on the work.

Mr. WASON. But that should come from the legislative portion of the Committee on Agriculture. We are not a legislative committee. This is a subcommittee of the Appropriations Committee, and it is subject to a point of order.

Mr. COBBS. In item No. 22 we ask for a position of chief cinematographer, at \$2,500. This position is recommended to provide for the continued employment at a more nearly commensurate salary for the work he performs of the chief photographer, the officer in charge of the department's motion-picture laboratory. This man, gentlemen, is a high-grade motion-picture photographer, and is one of the men whom we have to thank for the excellent photographic results that we have obtained. He is a man who has been in the laboratory, I think, ever since the motion-picture work in the department was started. I think that is the only reason that we have held him this long, because men performing the same kind of work are paid anywhere from \$3,000 up to \$7,000 or \$8,000 a year as camera men and laboratory directors for motion-picture concerns.

Mr. BYRNES. What is the item under which he is being paid?

Mr. COBBS. He is now being paid under item 38, one assistant in the document section photographer. We are carrying him under that position with the permission of the Civil Service on the condition that we ask for appropriate provision for his salary in the act for 1922.

Mr. RUBEN. Where is the one information assistant submitted in item 21 carried in the bill?

Mr. COBBS. That is an entirely new position.

Mr. HARRISON. There is nobody there now?

Mr. ANDERSON. This man in item 22 you say is now employed in the position under item 38?

Mr. COBBS. Yes, sir.

Mr. ANDERSON. That is an increase of \$700?

Mr. COBBS. Yes, sir. As I have said, gentlemen, he is an excellent motion-picture photographer, and he is a man who could unquestionably demand a very much higher salary outside of the department. Accidentally, he was pretty severely injured last year in getting some pictures for the department, and was laid up for a considerable length of time. I feel that it is particularly important that we pay this man more money if we are going to retain his services. We cannot hope to keep him for the money we now can pay him and we would not replace him for twice the salary he is now getting. I regard the promotion for the chief editor and for this man as the two most important, in just the two vitally essential changes in our estimates.

In item 23 we propose a change in title. We propose to drop one assistant in charge of illustrations and to substitute for that position a draftsman or photographer at \$2,100, item 24. The printed explanation there covers the matter, so that unless you care to have more detail on it, it will not be necessary to go into that.

There is no change in item 25.

In item 26 we are asking for six draftsmen or photographers at \$800 each. This is the first of a series of items which will provide for promotions in the various grades. These six positions, and nine draftsmen or photographers at \$1,400 each in item 29 are submitted in lieu of two draftsmen or photographers at \$1,500 each, one at \$1,300, 10 at \$1,200, and one lantern slide colorist at \$1,200. You will find those in items 28, 30, 31 and 33. This readjustment will result in an increase of \$5,900 in salaries, and one additional place. These photostat sheets that we have will show the readjustment

within the items which make it possible for you to understand the thing in detail.

Under this plan the three draftsmen or photographers who are now getting \$1,600 would get \$1,800, as would also the two men at \$1,500 each. The two draftsmen or photographers at \$1,400 would go to \$1,600, as would also the one man at \$1,300. The 10 draftsmen or photographers at \$1,200 each would go to \$1,400, and 1 lantern-slide colorist would go to \$1,400, providing promotions for the people in the grades which are mentioned in these items. If you will notice the items appearing on page 207, items 28, 30, 31, 32, and 33, you will see that they have been dropped to make that rearrangement.

That brings us down to item 34, in which we are asking for four laboratory aids at \$1,200 each. Two of the places are submitted in lieu of one laboratory aid at \$900 and an assistant photographer at \$900 in items 32 and 36. This will provide promotions of \$300 and \$240, respectively, for employees who are skilled in photographic laboratory work and are greatly underpaid. The proposed changes in designation will provide titles which more accurately describe the character of work performed and will afford greater latitude in filling vacancies. The two new places recommended will provide for much needed additional help in the motion-picture laboratory. We are asking in that item for two new places and two promotions, the two new places involving \$2,400 and the promotions \$540.

In item 35 we are asking for one laboratory aid, at \$1,080, to provide for the promotion of a messenger boy at \$720. This is a young man who has grown up in the organization, has been trained there in our routine photographic work, and who has become a very valuable and a very efficient helper. We feel that he is worth a good deal more than \$720. As I say, he has grown up in the work of the division, and he has gotten to the point now where he has got to have a salary more nearly approaching a man's wage than that of a boy.

Note that we drop item 36; the man there will be promoted to \$1,200 in item 34.

We propose to drop item 37 and include the position in item 13.

Under item 38 we are asking for another change of title, one assistant in document section. We propose to cover that position in item 39. That will give us one new position, one promotion, and the position which is now carried in item 38.

Mr. ANDERSON. These places are designated as assistants. Assistants to whom or to what?

Mr. COBBS. That is the very point, Mr. Anderson. If you say assistant in document section it does not mean anything at all, because we have not any document section. If we call that man an assistant it does not make a bit of difference what work he is doing. The fact that we have no document section is the confusing part of it. I do not happen to recall, offhand, just what men do hold those particular jobs. The printed explanation, though, gives, I think, most of the salient facts about the thing.

The new job at \$1,800 we are asking for in order to help handle our present distribution work and mailing system. The section there which handles those requests has to take care of a very large amount of mail. It runs regularly between 2,000 and 3,000 letters a day. They handle also the requests from Members of Congress for

farmers' bulletins. On account of the force we have available there we are unable to keep the work up to date, and we feel that with another \$1,800 man who can be assigned to this work, getting the work well organized and attending to some particular feature of it, we can get along better. Just as an example, he might handle the requests from Members of Congress. That is one of the big items we have to take care of. We should give very much better service than we are able to do at the present time.

Mr. WASON. Are you not giving pretty fast service in that now?

Mr. COBBS. I do not know exactly what we are able to do. I could not say offhand. I should say the work is at least a week behind. Judging from the dates of the letters which I see, it takes about a week or 10 days to reply to a request. Of course, just at the present time is really our rush season. Usually we have a heavier mail immediately after the Congress convenes and the requests pile up. Then, too, the schools have gotten started and we have a good many requests from them. We have a somewhat heavier mail at this time of the year than we do have through the rest of the year, but from the dates of the letters which come across my desk for signing, I think we are running not less than a week or 10 days behind as a regular thing, and sometimes it has been more than that.

Mr. HARRISON. The requests for bulletins, etc., average over 2,000 a day throughout the year, Mr. Wason, and sometimes they run as high as 3,500.

Mr. COBBS. It is a pretty big mass of stuff that they have to wade through. Each one of those requests also calls for on an average of about five bulletins, so that you can see the amount of work which is involved in handling that much mail.

In item 40, one foreman, miscellaneous distribution, \$1,500, we propose to promote to \$1,800 under item 39. The printed explanation under item 39 carries the reason for that.

Under item 41 we are asking for one executive clerk at \$2,000. This is to provide a promotion for the man who is now head clerk in the office of information. He is a very efficient young fellow, is doing good work there, and is the kind of man who is not going to be held unless we can keep promoting him—I will not say keep promoting, because I do not think he has had a promotion for some time. One of the difficulties we have is the fact that on account of the salaries we pay we can not train up in the organization men who are capable of stepping into the administrative positions in case they are vacated. We have not got the normal crop of young, bright fellows coming on to take these jobs that we ought to have to take care of the work. I suppose that is common to most of the bureaus, but it is certainly a very serious thing with us, because we need to keep these boys. A lot of them enter as messenger boys and prove to be bright chaps, but when they get to a certain point they feel that they have not the opportunity they would have on the outside, and they go, and we lose the experience and training they have had.

Mr. ANDERSON. How many men have you in the office of information?

Mr. COBBS. The office of information, I think, the division has 12 places, including a force of nine clerks and typists.

Item 42 is one of the items which provides for some promotions in the clerical force; 4 clerks of class 4 at \$1,800 each, an increase of three.

Two of these are by transfer from the lump fund, and we are asking for one new place. If provision is made for this new place as executive clerk at \$2,000 one of the present clerks of class 4 will be advanced to that position. Item 42, therefore, provides for two additional \$1,800 places. One of these is needed in order to provide a competent head clerk for the illustrations section of the division. This employee will handle the business operations of the section and assist in the general administration of the office. A capable employee is also needed to take charge of the mails and files section of the division.

Mr. ANDERSON. How many people are employed in the illustrations section?

Mr. COBBS. In the illustrations section we have 23 people. I would like to say that we are badly in need of more help there. As you gentlemen probably know we have been making an effort in the past few years to make our bulletins, particularly the farmers' bulletins, more attractive than they have been, and we are trying to put life into them by the use of good illustrations. At the present time our force is inadequate to take care of the need for work of that kind. One of those new places that we are asking for under item 42 is needed to provide a man to have charge of our proposed consolidated files and of the handling of the mails. At the present time we have not any central files at all, for, as you gentlemen probably know, we are scattered around, I think, in six different buildings. We hope to get at least two of our offices in the same building and to make some provision for central filing, so that we will not have to chase all over Washington whenever we want a letter. At the present time it is very difficult to keep track of our correspondence, because we have no provision for a central files in the division.

Item 43 provides for 6 clerks of class 3 at \$1,600 each. There is an increase of 5, one by transfer from the statutory roll of the Secretary's office, and 4 new places. If you will read the explanation under item 43 you will get the gist of the promotions which will be made in the event the changes we are asking for are granted, 4 additional clerks of class three, 4 of class 2, 3 at \$1,320 each, 10 of class 1, and 52 at \$1,080 each, all of which you will find in items 44, 45, 46, and 48, are requested in lieu of 18 at \$1,100 each, 40 at \$960 each, and 12 at \$900 each, those are the positions in items 47, 49, and 50. This readjustment involves an increase of 3 in the number of places, and \$15,120 in the total amount. Last year in the hearings before the committee Mr. Haugen, I think, brought out the fact that some of the clerks in the division were receiving a very much lower salary scale than people in other branches of the Government service who were doing similar work. At the request of the committee the department submitted some hastily compiled figures which showed those grades that were most in need of help, and the Congress provided for some relief for them. This year we have come to you with carefully prepared figures, asking for the promotion of the people whom we feel should be given more money, and this item of the general clerical force and other items in the photographic, subclerical, and miscellaneous are to provide for those promotions.

Mr. ANDERSON. How large an increase is there in the volume of work that you are doing in the bureau.

Mr. COBBS. I am not in a position to answer that from any personal knowledge, Mr. Anderson. My general idea is that, as far as the

distribution of publications is concerned, the work has run along with rather a gradual increase with the exception of the war years, when we had a very large increase in the number of publications distributed. On the whole I should say the increase represents rather an even curve, so to speak. I think the growth in volume has been normal; I would not attempt to say how much. Of course, as regards the exhibit work, motion-picture work, and the information work there is a very decided increase.

The motion-picture work in particular is an important and rapidly growing activity. Requests for our films have increased so fast that we can not begin to take care of the demand. I could not say, off-hand, I could not give you even an approximate idea, I am afraid, of the percentage of increase in business in the division as a whole. Up until a short time ago—when was that motion-picture work brought into the division, Mr. Harrison?

Mr. HARRISON. Last July.

Mr. COBBS. The motion-picture work, the exhibit work, and the information work were under the office of the secretary until that time, and their addition to the division of publications has greatly increased both the scope and volume of our activities. It would be different to make a comparison.

The explanation under item 43 applies to item 44.

Mr. ANDERSON. That covers everything down to item 51, does it not?

Mr. COBBS. Yes; that takes us down to item 51. Are there any further questions on that general clerical readjustment?

Mr. ANDERSON. This clerical readjustment would make your lowest salary \$1,080?

Mr. COBBS. Yes, sir.

Mr. ANDERSON. That includes people who are doing straight clerical work?

Mr. COBBS. Yes, sir.

Mr. ANDERSON. Filling requests for documents?

Mr. COBBS. Yes; general clerical work of various kinds.

Item 51 provides for a promotion for a man who is now getting \$1,200. He is listed now as a machine operator, but we propose to promote him to \$1,400. He is really a high-grade mechanic, takes care of the machines in the shop, and is a very valuable man to us. We feel that he deserves the \$200 increase.

Item 52, two foremen at \$1,400 each, provides promotions for the men who supervise the groups of machine operators in the work. At this time they receive the same salary as some of the employees engaged in routine work under their supervision, and we believe the higher grade work of supervising the others should entitle them to the \$200 increase.

Mr. ANDERSON. Where are those people carried now?

Mr. COBBS. Those are carried under item 53. That provides, you see, for a decrease of two places, which are covered by this item 52. We have five machine operators at \$1,200 each now, and we are asking for three to be promoted to \$1,400 and two to remain at \$1,200, and one additional position.

In item 54 we are asking for a change of title. This "chief folder" is no different from the other people doing the same work, and we

are asking that the meaningless title be dropped and that the place be carried under item 62 instead. That will take us down to item 55.

Mr. BYRNES. That covers messengers?

Mr. COBBS. That covers the subclerical group. If the changes which we are asking there are granted, promotions and changes will be made as follows: The chief folder at \$1,200 will be carried under item 62; 3 messengers at \$900 and 10 at \$840 will be carried under item 64 at \$1,020; 4 at \$780, 10 at \$720, and 3 at \$600 will be carried under item 55 at \$900; then 1 folder, which is item 60, and 8 skilled laborers at \$1,100 will go in with the chief folder, and other items into item 62, at \$1,200.

Mr. ANDERSON. It gives you the same number of employees with an increase of \$6,140?

Mr. COBBS. That is right.

The CHAIRMAN. An increase of about 15 per cent?

Mr. COBBS. That takes us down to item 65: Eight messenger boys at \$720 each, a decrease of one by transfer to the statutory roll of the Secretary's office. At the present time one boy at \$720 is detailed to the office of the Secretary, where his services will be permanently needed. The transfer of the position to the statutory roll of the Secretary's office is therefore recommended.

There is no change in item 66.

In item 67 we are asking for an increase of two messenger boys by transfer from the statutory roll of the Secretary's office. Two messenger boys, at \$480 each, are at present detailed from the Secretary's office to the Division of Publications, where their services will be permanently needed. Provision is therefore made for the transfer of the positions.

Mr. RUBEX. Do these messenger boys do anything else except carry messages?

Mr. COBBS. Yes, sir. Some of the older ones do. These are just the younger boys in this item. The older messengers run some of the duplicating and mailing machines and do other routine work.

Mr. RUBEX. The reason I asked was that there are always so many questions asked about the number of messengers, and we ought to be able to show those who are really messenger boys and those who are doing other work, in addition to being messenger boys.

Mr. COBBS. The question of our messengers, Gov. Rubey, as I said a minute ago, ties in with the physical location of our offices. Offices of the division are located, I think, in six buildings. Whenever we have got a letter or memorandum or anything at all to go to the different branches of the division, it is not like we can send it into the next room or in the same building, but it has to go in six different directions.

Mr. HARRISON. Messenger boy is a civil-service designation and covers many duties that boys can perform satisfactorily in addition to carrying messages. When they are not carrying messages they are running mimeograph machines or multigraph machines, and doing other miscellaneous tasks.

Mr. RUBEX. That is what I wanted to get in the record, that these boys are doing other things.

Mr. HARRISON. Absolutely. Some of them assist in the laboratories when they are not busy on other matters, and they do a lot of

routine work that any boy with any sort of intelligence can do; but "messenger boy" is their civil-service designation.

Mr. COBBS. Those are the only changes requested on that page. The next page is the summary. That brings us down to page 212, item 70, in which there is no change.

In item 71 there is no change.

ENVELOPES, STATIONERY, AND MATERIALS.

In item 72 we are asking for an increase of \$3,000 for envelopes, stationery, and materials. As you gentlemen know, there has been a decided increase in the cost of those materials. In addition to that, we are having added demands for the amounts that we are using, so that the \$3,000 increase there is a very conservative estimate for the actual cost of the material which we have got to have to do business with.

OFFICE FURNITURE AND FIXTURES.

In item 73 we are asking for \$1,680 increase in our appropriation for the purchase of furniture and fixtures. As you will notice from the explanation, a great deal of the equipment we have got in the division is old and worn out, and it is not of a sanitary type. We are anxious to replace it as quickly as we can. The point I would like to make there is that which we have made in the note: We can get a great deal of the needed furniture from the surplus stocks which are available through the General Supply Committee, and the money made available would just be transferred back into the Treasury to enable us to get the equipment.

PHOTOGRAPHIC AND ARTISTS' MATERIAL AND EQUIPMENT.

In item 74 we are asking for an increase of \$3,000 for the purchase of photographic equipment and photographic materials and artists' tools and supplies.

Mr. HARRISON. We are omitting certain language which is permanent legislation.

Mr. COBBS. That language is permanent legislation; we merely omit it. The photographic materials used in this work have advanced very largely in price.

Mr. ANDERSON. I am told that there is a very marked decrease in the cost of envelopes and paper.

Mr. COBBS. Since when?

Mr. ANDERSON. Within the last six weeks.

Mr. COBBS. I do not think so; I have not seen any. Mr. Jump, did you get some quotations?

Mr. JUMP. Our last quotations on envelopes do not show any decrease. Take a "4½ by 9½," which is a common size, and of which we use about 300,000 a year. For the fiscal year 1920 the price was \$1.29 per thousand. The price this year, under the contract which the Post Office Department negotiates, is \$2.14—nearly double.

For another size, of which we use over a million, the price last year was \$1.72 a thousand, and this year it is \$3.15.

For another size, of which we are using a million and a half a year, the price last year was \$2.36, and this year it is \$3.70, and it runs that way right straight along.

Mr. RUBEY. Are these contracts made for the fiscal year?

Mr. JUMP. Every three months the Post Office Department negotiates a new contract on envelopes for the Government departments, and that will reflect any reduction in the price of the material. We have not heard of any so far. We are going along under these prices. Of course, if there is a slump in the market when new contracts are made, we will get the benefit of them.

With paper, it is largely the same proposition; but we do not buy those things out of this item we are discussing now. This is for photographic materials.

TELEPHONE, TELEGRAPH, FREIGHT AND EXPRESS CHARGES.

Mr. COBBS. In item 75 we are asking for an increase of \$300 in our fund for telephone and telegraph service and freight and express charges. The freight increase alone, as I think you gentlemen know, is 36 per cent, and there have been other increases of the same sort which we have had to meet.

FOR WAGONS, MOTOR TRUCKS, BICYCLES, HARNESS, ETC.

In item 76 we are asking for an increase of \$1,000 for maintenance of wagons, motor trucks, bicycles, horses and harness. The increase of \$1000 in this item is urgently needed to keep in serviceable condition the two motor trucks used for delivery work by the Division of Publications and to meet the high cost of gasoline, oil, and automobile accessories.

Mr. RUBEY. I imagine you can get a good deal of harness from the War Department.

Mr. COBBS. The trouble about that harness is that we can not put it together.

Mr. JUMP. The real situation there is that we have one wagon and one horse that we use when the automobiles are out of commission. We very seldom have any occasion for its use, but it is just often enough to keep that old language in the bill. Practically all the money is used for maintenance of our automobile trucks, and the amount is not sufficient.

Mr. BYRNES. You do not expect to buy any motor cars with this?

Mr. COBBS. No, sir; not very many.

Mr. BYRNES. You could buy three Fords with it, if you got \$2,000.

Mr. HARRISON. Yes; we could buy trucks, but we can not buy passenger-carrying machines under this item. It does not, however, make provision for the purchase of any new trucks. There is a general law which prohibits the purchase of passenger-carrying vehicles, unless there is specific authority of Congress.

PURCHASE OF MANUSCRIPTS, TRAVELING EXPENSES, ELECTROTYPES, ETC.

Mr. COBBS. In item 77 we are asking for an increase of \$650 to meet the advanced cost of the various items there incident to the general maintenance of the division. There again it is a question of ad-

vanced prices, making it necessary for us to request the increased appropriation.

There is no change in items 78 or 79. I think that covers all the changes which were made.

NUMBER OF BULLETINS ISSUED WEEKLY.

Mr. ANDERSON. I want to ask you about a matter somewhat outside of what we have been discussing. I notice in the report of the Chief of the Division of Publications a tabulated statement on a part of page 20 in which it is stated that 10,271,873 bulletins were sent out from the office of the Secretary. What are those?

Mr. COBBS. I do not know what that could be.

Mr. ANDERSON. That is on page 20.

Mr. JUMP. That must include such publications as the Weekly News Letter.

Mr. HARRISON. That is undoubtedly the explanation. The printing appropriation, Mr. Chairman, is allotted to the different branches of the department at the beginning of the year. The Weekly News Letter and certain other periodicals are general publications, are not chargeable to any particular bureau, and therefore they are charged to the office of the Secretary. It is merely a bookkeeping arrangement.

Mr. ANDERSON. There are not any 10,000,000 copies of the News Letter sent out?

Mr. HARRISON. Mr. Chairman, there are approximately 150,000 copies a week sent out for 52 weeks in the year.

Mr. ANDERSON. That is too many.

Mr. HARRISON. That is another question, but I want to assure the committee that the Secretary's office has not distributed any such number of bulletins. I would like permission to have the privilege of inserting in the record a statement showing what the 10,000,000 copies comprise, so that the question that is evidently in your mind will be cleared up.

Mr. ANDERSON. Well, I think that ought to raise a question.

Mr. HARRISON. I think it is incorrectly stated in the report, or, at least, it is improperly stated. It certainly should not appear in that form.

(The statement follows:)

The statement contained on page 20 of the Annual Report of the Chief of the Division of Publications for the fiscal year 1920, which indicates that 10,271,873 copies of publications prepared by the Office of the Secretary were distributed during that fiscal year, is the result of a technical classification of the total number; 15,288 are properly chargeable to the Office of the Secretary.

The remainder are publications of the Office of Farm Management and the Office of Information, which were under the Office of the Secretary during the fiscal year 1920, and miscellaneous publications (other than farmers' and department bulletins) pertaining to the work of the various bureaus of the department. For many years the distribution records have been classified so as to include under the Office of the Secretary a number of general publications, regulatory announcements, etc., of the character indicated in the statement below, under the heading "General." This has been done for the sake of convenience.

The Secretary's circulars and department circulars were included in the classification under the Office of the Secretary. With the exception, however, of the four numbers, amounting to 11,677 copies, which are itemized in the statement below under the Office of the Secretary, they deal with definite agri-

cultural subjects and were prepared by the various bureaus concerned and distributed in the usual way. These circulars contain material which does not properly come within the scope of the farmers' bulletins or department bulletins, and for the sake of convenience the records have been maintained under the heading "Office of the Secretary."

An itemized statement follows, showing the classes of publications included in the total of 10,271,873:

Office of the Secretary:

Annual Report of the Secretary----- 3,621

Secretary's circulars:

No. 131. Address of Secretary Houston before the joint conference of the agricultural commission of the American Bankers' Association and the agricultural committees of the State Bankers' Association at Washington, Feb. 26, 1919----- 75

No. 133. Address of Secretary Houston before the governors' conference, Annapolis, Md., Dec. 16, 1918----- 125

No. 146. Address of Secretary Houston before National Association of Commissioners of Agriculture----- 5,439

No. 147. Address of Secretary Houston before Association of American Agricultural Colleges and Experiment Stations----- 6,028

11,667

Total, Office of the Secretary----- 15,288

Office of Farm Management:

Report of chief----- 1,275

Department bulletins----- 28,749

Miscellaneous publications----- 2,301

Total, Office of Farm Management----- 32,415

Office of Information:

Weekly News Letter----- 7,549,500

Agricultural information service----- 400,325

Annual reports and summaries----- 7,820

Total, Office of Information----- 7,957,645

General:

Annual reports of department, Insecticide and Fungicide Board, Federal Horticulture Board, Division of Accounts, Solicitor, and Weather Bureau----- 6,498

Service and regulatory announcements, notices of quarantine, food inspection decisions, rulings, orders, etc., of Federal Horticultural Board----- 84,464

Yearbooks----- 29,357

Posters----- 96,845

Miscellaneous----- 114,750

Fiscal, administrative, and property regulations----- 145,000

Secretary's circulars (other than Nos. 131, 133, 146, and 147 listed above under Office of Secretary)----- 246,804

Department circulars----- 1,542,807

Total, general----- 2,266,523

10,271,873

Mr. ANDERSON. Let me ask you now to get this thing straight. What part of this work of distribution is done in the Division of Publications and what part of it is done down in the Government Printing Office?

Mr. COBBS. The publications are mailed out from the Government Printing Office upon our order.

Mr. ANDERSON. In what way? We will say that you get a request from a Member of Congress for farmers' bulletins to go out to persons 50 or 100 addresses, 5 or 6 bulletins to an address. What becomes of it?

Mr. COBBS. The Members of Congress ordinarily send their franks with the numbers of the bulletins written on the back of the franks. We charge up the total amount against their record, and forward these franks to the Printing Office for mailing.

Mr. ANDERSON. You do not have anything to do with the mailing those bulletins?

Mr. COBBS. No, sir. The same thing applies to the miscellaneous requests that we get for farmers' bulletins. We take the letter, enclose on the flap of the envelope the number of the bulletin which is to be sent, and send that to the Printing Office for mailing.

Mr. ANDERSON. Well, what bulletins, then, if any, are mailed from the Division of Publications directly; are there any?

Mr. COBBS. We keep a small stock there which are sent out to our friends or are used to supply requests from callers——

Mr. JUMP. The point there, Mr. Chairman, that if it is the distribution of some bulletin to some of our own staff, the distribution frequently is done by the department. That is not distribution to the public. That is all done by the superintendent of documents under the law.

Mr. ANDERSON. What I am trying to get at is what is the function of the Division of Publications.

Mr. JUMP. In the congressional distribution we exercise a most important function, which is not comparable at all with the function that the Government Printing Office exercises, for this reason: A constituent writes in to a Member of Congress and says, "Please send me 10 bulletins on how to apply, for instance, this poison on cotton," that the committee was discussing here a little while ago when some of the other bureaus were presenting their estimates. Our people, who are as expert as we can obtain at the salaries available, have to make a careful selection and designate which ones the Government Printing Office is to send. That is the function we exercise there.

In the case of all of these things that the superintendent of documents distributes we have to maintain the mailing lists, and we have to put this name on and take that name off, and we have to change a man's address, or take a name off one list and put it on another list. You have no conception of the amount of routine involved in it until you actually go into it.

The requests that come from the public are a very important thing. They average around 2,000 a day, and the great percentage of them do not know exactly what they want. They are unable to tell what they want, or at best only do so in a rather obscure way. In such cases there is a chance for the department to render a great service to the people by making helpful selections, or else spread the idea that some people have, that we do not know how to handle things here in Washington. We take those letters and give every one the individual attention our present facilities will permit.

Mr. BYRNES. You said they average 2,000; you mean 2,000 a day?

Mr. JUMP. Yes; and usually more than that.

Mr. ANDERSON. You make up the form of these various pamphlets and posters?

Mr. JUMP. We get them up absolutely. The superintendent of documents does not get them until they are delivered from the press.

Mr. ANDERSON. You have all the display part of it?

Mr. JUMP. Yes, sir; strictly.

Mr. COBBS. We have all the preparation of the material.

Mr. HARRISON. A manuscript that comes from the bureau is examined in the Division of Publications by the chief editor in order to determine whether the subject has been adequately and effectively presented, and it is frequently necessary for the editor to confer with the bureau editor and the author about the matter. The man who has written the manuscript may have discussed the subject merely from a technical point of view, so that it is not clearly intelligible to the layman. Then the work of preparing the cover and of getting the bulletin in shape for the printer is done in the Division of Publications.

Mr. ANDERSON. That is the display part of it?

Mr. HARRISON. Yes; and there is no public distribution made by the Division of Publications of our publications. We render the intermediate service between the public and Members of Congress and the superintendent of documents, and, at the same time, we make a certain distribution of publications to our own employees. The Division of Publications also furnishes bulletins at times to the different bureaus to be used in answering correspondence. Frequently an inquiry can be easily answered by sending a man a bulletin and adding to it certain general information which brings it more up to date.

WEDNESDAY, JANUARY 5, 1921.

LIBRARY.

STATEMENT OF MISS CLARIBEL R. BARNETT, LIBRARIAN, DEPARTMENT OF AGRICULTURE.

INCREASES IN SALARIES AND PERSONNEL.

Mr. ANDERSON. You may take up your first new item.

Miss BARNETT. The principal changes in the statutory roll involve the substitution of 11 positions with salaries ranging from \$1,500 to \$1,920; for 17 positions with salaries ranging from \$840 to \$1,200. These changes are necessary in order to provide better salaries for the assistants performing the higher grades of work. Up to the 1st of July, 1921, there had been no change in the statutory roll of the library for three years. That was during the period of the war when salaries increased very greatly in business offices and to some extent in the newer offices of the Government. The fact that the library had had no increases made it extremely difficult to get trained assistants at the salaries the library was able to offer and the

work has been severely hampered. The library, as you know, is a technical and scientific library and a large number of books are in foreign languages. It is therefore necessary to have high grade assistants. A large number of the assistants are college graduates and have had library school training. It is impossible to get such assistants at salaries as low as \$840 and \$900, or even \$1,000, and at the present time we have eight positions vacant because we have been unable to fill them at the salaries we were able to offer.

Mr. HARRISON. The effect of all these changes on the statutory roll, Mr. Chairman, is indicated in the table on page 217, showing we are dropping 18 places carrying a total of \$17,860 and substituting 12 places carrying an appropriation of \$18,660.

Mr. ANDERSON. My recollection is that the increase in the salaries of the library force, since 1917, is larger, relatively, than the increase in any of the salaries of the other bureaus.

Miss BARNETT. We only had one increase last year, a \$1,400 place in lieu of two at \$900, and, in the three years previous to that, we had had no changes in the statutory roll.

Mr. ANDERSON. I may be mistaken about that.

Mr. HARRISON. There has been practically no increase made in the library force, although we have recommended increases for several years.

Mr. RUBEN. The appropriations would indicate that because there are no material increases in the appropriations.

Miss BARNETT. The appropriation for 1918 was \$32,160 and it was the same for 1919 and for 1920.

Mr. HARRISON. There has been practically no change in the roll since 1916.

Miss BARNETT. No change since 1916.

Mr. ANDERSON. Last year, according to the record, I have here, you dropped two clerks at \$900 and added one clerk at \$1,400 and another clerk at \$1,200, transferred from the lump sum.

Miss BARNETT. Yes. I think I may say that the library is more handicapped in the way of salaries than any other office in the department. Is not that correct, Mr. Harrison?

Mr. HARRISON. That is true.

Miss BARNETT. At the present time three positions are being carried for the library by bureaus, because it has been impossible for us to fill those \$900 places.

Mr. ANDERSON. Those persons are paid out of lump sums?

Miss BARNETT. They are paid out of lump sums of the bureaus. The law makes it possible; there is a provision in the 1912 Agriculture Appropriation Act which made it possible for bureaus to detail assistants to the library and for the library to detail assistants to the bureaus. As the work of the library is principally for the benefit of the bureaus it seemed justifiable to go to the bureaus for this help in the present emergency.

Mr. ANDERSON. Can you give us the salaries of the persons carried on the bureau lump sums?

Miss BARNETT. There are two being carried at \$1,400 and one at \$1,200.

NUMBER OF BOOKS.

Mr. ANDERSON. How many volumes have you in the library now?

Miss BARNETT. We have 155,000 volumes. We receive 2,700 current periodicals. These periodicals are from practically every civilized country and a great many different languages are represented.

GENERAL EXPENSES.

Mr. ANDERSON. Suppose you take up your general expense item 19, now?

Miss BARNETT. There is an increase in the funds for general expenses from \$22,000 to \$42,000. This amount is recommended because of the increased demands of the department and the State agricultural colleges and experiment stations for books and library service in general, and because of the increased cost of books and periodicals, due to the great increase in the cost of paper and printing. As an illustration of the increase in the cost of books may I mention just one item? The library is the only office of the department which is able to purchase books and periodicals; therefore it is necessary for the library to purchase for the various offices such reference books as dictionaries and atlases and the Official Railway Guide. The Official Railway Guides are needed in the administrative offices in connection with the travel accounts. The cost of this guide has increased from \$8, in 1916, to \$18 for this year. As 35 copies are needed in the department the cost of the Official Railway Guides this year will be \$630, and that is only one item. I could mention a large number of other reference books which have increased very greatly in price. Almost every periodical has increased its subscription price. The library, up to the appropriation for this present year, has had no increase in its book fund for three years. In the meantime the department has grown and the work has expanded, which has resulted in greater demands upon the library.

Mr. MAGEE. Is this library open to the use of the public at all?

Miss BARNETT. It is free for reference to anyone who wishes to use it. Next to the department use the greatest demands upon the library are made by the State agricultural colleges and experiment stations. Through our system of interlibrary loans we send books to those institutions and they greatly appreciate the service. I have received a large number of letters from the colleges and experiment stations urging us to continue and to increase this service and stating they felt that the appropriation for the library should be much larger. None of the agricultural colleges and experiment stations are able to purchase all the books they need. They depend upon the library of the department for the rare and more expensive books and periodicals, and it is absolutely essential that they should have that privilege. The library may be said to perform, in a limited field, the same national service that the Library of Congress performs; for agriculture and the related sciences we attempt to act as the national library.

Mr. ANDERSON. You are proposing, apparently, an increase in the people who are carried under this lump sum?

Miss BARNETT. That is because certain of the higher-grade positions which had previously been on the statutory roll it is hoped to carry next year on the lump-sum roll. You will note there are eight

positions provided for on the lump sum. These are for the assistants of the highest grade. They are on a par with the scientific workers in the bureaus.

Mr. ANDERSON. What is the character of the work done by them; are they translators?

Miss BARNETT. No; not translators, although a knowledge of foreign languages is required in their work. The first position would be for the assistant librarian and the others for the heads of the various divisions—the catalogue division, the accessions division, and readers' division, and for four first assistants. There is no place provided on the statutory roll at the present time for an assistant librarian.

WEDNESDAY, DECEMBER 29, 1920.

STATES RELATIONS SERVICE.

STATEMENTS OF DR. A. C. TRUE, DIRECTOR STATES RELATIONS SERVICE; MR. E. MERRITT, ASSISTANT TO THE DIRECTOR; MR. C. B. SMITH, CHIEF, OFFICE OF EXTENSION WORK NORTH AND WEST; MR. J. A. EVANS, CHIEF, OFFICE OF EXTENSION WORK SOUTH; MR. WALTER H. EVANS, CHIEF OF DIVISION OF INSULAR STATIONS; AND DR. C. F. LANGWORTHY, CHIEF OF OFFICE OF HOME ECONOMICS.

READJUSTMENT OF AND INCREASES IN SALARIES—ELIMINATION OF LOWER-GRADE POSITIONS.

Mr. ANDERSON. Dr. True, take up the statutory roll, page 222.

Dr. TRUE. This statutory roll is made up on the basis of a net decrease of 11 places and has been adjusted with reference to making a few promotions, but without increase of force. During the present fiscal year the only promotions that have been made in the clerical force have been due to resignations or transfers. We find that we are not able to get competent clerks for a considerable share of our service without paying an initial salary of at least \$1,200, and so we are asking to have a certain number of places on the roll at lower salaries, which at present are not filled, taken out of the roll.

VACANCIES.

Mr. ANDERSON. How many vacancies have you now on your statutory roll?

Dr. TRUE. I think about about 20 to 25 actual vacancies.

Mr. ANDERSON. Can you indicate the places that are vacant?

Dr. TRUE. I can not in detail.

Mr. ANDERSON. If you can not do it now, I wish you would furnish the committee with a statement of the places that are vacant and indicate them in such a way that we can locate them in the estimates.

Dr. TRUE. The statement in the estimates, on page 224, shows a summary of the statutory roll as we are asking to have it adjusted.

The first place involves a promotion, and then there are a number of places classified as new places.

NOTE.—Under item 21 there are 3 positions vacant; under item 22 there are 18 vacancies and 13 filled by temporary employees soon to be released; under item 23 there are 3 places filled temporarily; under item 31 there are 2 vacancies; under item 32 there is 1 skilled laborer temporarily, making 23 vacancies and 22 filled temporarily, but not needed permanently on the statutory roll.

Mr. HARRISON. There are 13 new places substituted for 42 places that are being dropped.

Dr. TRUE. New places. That, however, is a technical term which does not involve actual additions to the force.

Mr. ANDERSON. What you are actually doing is dropping 42 places and you are adding 13 new places and 18 transfers.

Dr. TRUE. Making 31, which makes a net reduction of 11 places.

Mr. ANDERSON. Take up the respective items.

Dr. TRUE. I will begin with the third item. We have one administrative assistant at \$3,000, which involves a promotion of \$600, and this is our man who is in charge of our fiscal affairs. He is a long-time employee, and in view of his responsibilities we think that his salary as proposed is not unreasonable under present conditions.

Under item 5 we are changing the title of our chief clerk and asking for a promotion of \$500. As stated here, there has been no change in the salary of this position for over 10 years, whereas the duties and responsibilities have been greatly increased, because we have now over 4,000 people on our roll and a chief clerk has to be responsible for the records of all those people. The reason for change of designation in the two cases which I have mentioned is that we find it desirable to have a terminology which will enable us to use the place in case of a vacancy without insistence upon the exact duties named in the narrower title.

Mr. BYRNES. You will have no chief clerk at all in your bureau?

Dr. TRUE. No; we will have no person with the designation of chief clerk in that case.

Mr. ANDERSON. Apparently, in most of these statutory rolls the reason for a change of designation is to afford an excuse for an increase in salary.

Dr. TRUE. That is not the reason in these cases. The increase of salary might be asked for under the other designations. Under 7 there is a change of title without increase of salary, the reason for the change being the same as I have already indicated.

Mr. ANDERSON. What is the difference between an executive assistant and an administrative assistant?

Dr. TRUE. The term "administrative assistant" as used in the department phraseology signifies a more important position, with larger responsibilities.

Mr. ANDERSON. And the difference is \$500, apparently.

Dr. TRUE. Under No. 10, we have an increase of one person indicated, and under that a note which explains other changes which are asked for under other items. That matter, however, is all brought out in the summarized statement at the end, which we have already talked about.

Mr. ANDERSON. If you want to submit the matter to the committee as the statement is in the estimates, I think the committee has no objection.

Mr. BYRNES. That statement is clear.

Dr. TRUE. I do not know that there is anything further that needs to be explained there.

FOR THE ESTABLISHMENT OF EXPERIMENT STATIONS.

Mr. ANDERSON. Take up items 35 and 36. There is no change in those two items.

Dr. TRUE. There is no change in item 35. It is an appropriation under the so-called Hatch Act, for the experiment stations, and 36 is an appropriation under the so-called Adams Act for experiment stations.

Mr. ANDERSON. The appropriations go direct to the stations?

GENERAL ADMINISTRATION—EXTENSION WORK.

Dr. TRUE. Yes, sir. Under 37 we have the item that includes the general administration of the Hatch and Adams Acts and the Lever Act for extension work. There we are asking for an increase of appropriation to the extent of \$20,000. That sum, like the sum which we already have, is divided into two projects. One includes all of the business of the Office of Experiment Stations, which deals with the stations in the 48 States and with the stations in Alaska and our insular possessions. There the proposition is to expend under the Office of Experiment Stations \$48,500, which would be an increase of \$10,000 over the present allotment, but that has been found to be insufficient for the work of the office and we have been obliged, therefore, to have funds transferred from the appropriations for the insular stations.

We make an annual inspection of the experiment stations and an examination of their accounts. We prepare the Experiment Station Record and the annual report required by law, and the expenses of that work have necessarily grown, and there have been extra traveling expenses so that we actually need for that work the \$48,500 estimated. The balance, which amounts to \$33,000, is used in the inspection and general administration of the extension act. The funds there include both the Federal appropriation, which next year will be \$4,080,000, and the State offset of \$3,600,000, or a total of \$7,680,000. We make a careful examination of the accounts as kept by the colleges and ascertain what has been done in some detail with that money. The present allotment for that work is not really sufficient to bear the entire expense of the present work, and next year we will have in both the Federal and State appropriations an addition of \$1,000,000 to that fund, which will require more work.

Mr. ANDERSON. If you get it.

Dr. TRUE. This will come to us automatically under the Smith-Lever Act, as far as this particular item is concerned, whatever might be done under other items.

Mr. ANDERSON. Is any of this \$33,000 dependent upon that additional million dollars being expended this next year?

Dr. TRUE. We are making this estimate of \$33,000 for the administration of the Smith-Lever Act.

Mr. ANDERSON. Did you take into consideration the additional million dollars? Is any part of it dependent on your getting that additional one million dollars?

Dr. TRUE. Yes, sir; we have taken into account the increase of work which will come through our having that additional million dollars which we get under this permanent act.

FARMERS' COOPERATIVE DEMONSTRATION WORK OUTSIDE OF COTTON BELT.

Mr. HARRISON. We will ask Dr. Smith to present later the next item. No. 38. farmers' cooperative demonstration work outside the cotton belt.

Dr. TRUE. The next item is farmers' cooperative demonstration work in the Northern and Western States. I do not know whether you have any particular inquiries to make with reference to that which I can answer better.

Mr. ANDERSON. I think what the committee is interested in just now is in how this money is expended, how that expenditure is divided up between county agents' work and home demonstration work, in administration expenses, or whatever it is for.

Dr. TRUE. Would you like in that connection to have me make a general statement about extension work, including all the funds first, or shall I take up these?

Mr. ANDERSON. Take it up item by item.

Dr. TRUE. I can make a general statement and Mr. Smith can supplement the matter under item 38. Of that amount, \$533,212 is allotted to the 33 Northern and Western States for use in the work in the counties, including a portion of the salaries of the supervising officers. In addition, \$25,000 is spent for penalty envelopes distributed to agents in the States. \$108,680 is spent for the field work of our Washington office in aiding the work in the counties and also carrying on the farm-management-demonstration work, which this office has carried on for a number of years. Then, \$43,980 is spent by this office in the general supervision of the cooperative extension work in the Northern and Western States, and we have \$4,552 as a reserve fund, at present. Very likely Mr. Smith can tell, if you desire to know, the division of that fund between county agents and home demonstration work, and so forth.

Mr. ANDERSON. You say \$533,212 is allotted to the States for use in the counties and that that includes a certain amount for supervision in the States. Can you say how much of that actually goes out into the county and is used by the county agents or for home demonstration work in the field?

Dr. TRUE. Yes; we can tell just how much is spent on the county agents.

ALLIOTMENTS TO STATES FOR WORK IN COUNTIES—HOME DEMONSTRATION WORK.

Mr. SMITH. We spent in the field about \$285,000 of that for county agents' work and about \$103,000 for home demonstration work. These are in round numbers. About \$110,000 was spent for boys' and girls' club work; about \$36,000 for farm-management demonstrations. These items aggregate about \$534,000 allotted to the States. Then

in addition to that we furnished these counties the penalty envelopes, amounting to about \$25,000 more.

Mr. ANDERSON. That does not come under your appropriation, does it?

Mr. SMITH. Yes; that comes out of our appropriation. We have to pay for these envelopes, sending them out to the States. Everyone who is appointed on our rolls as an agent of the Department of Agriculture gets the use of the penalty envelope in his official business.

Mr. ANDERSON. That will be the cost of the envelopes.

Mr. SMITH. It is the cost of the envelopes that go to the States.

Mr. ANDERSON. This \$285,000 represents the amount that actually goes to the county agents' salaries out of this fund.

Mr. SMITH. Not all of that goes to the county agents' salaries, because a part of it goes to the payment of the leader at the college who supervises the work in the State.

Mr. ANDERSON. Let us get right down to it and find out how much of this money actually goes into the county agents' salaries.

Mr. SMITH. I have not the figures for each State which show just how much is spent at the colleges.

Mr. ANDERSON. We started out with \$533,212, and have got down to \$285,000 for county agent work. Let us get down to the bottom of it.

Mr. SMITH. I will try to give you that in detail. I have not the amounts totaled that go into county agents only and the leaders only, but I have the details here for each State and can give you these details. These are based on our allotment to the States July 1 last, and cover this current year. If you would like to have a separate statement, we can send it to you later.

Mr. ANDERSON. I think we should have it.

Dr. TRUE. It is only fair that we should explain in this connection that that matter has come about by adjustment of our affairs with the agricultural colleges. That is, in a general way, it has seemed to them and to us desirable that we should put a considerable share of our money into the salaries of the State leaders rather than into the salaries of the agents in the counties. We might just as well by way of agreement with the colleges in this cooperative work have undertaken to pay a certain proportion of the salary of each of the county agents, but, on the whole, it has seemed best not to undertake to do that, but to conform to the wishes of the States with reference to the adjustment of these funds.

Mr. ANDERSON. Complaint has been made all over the country—and it has been made to me a great many times—that this money, a very large proportion of it, never gets out into the field at all; that it is dissipated in State agents and supervisors, and supervisors of supervisors, until a relatively small proportion of it actually gets used in the field for the purpose for which Congress originally appropriated it. I do not know whether that criticism is justified or not. I am trying to find out.

Mr. SMITH. This is our general plan, and it began more particularly last year. We have adopted the general plan of contributing to the support of extension work in the States at the rate of \$1,500 for each of the leaders of the county-agent work, the club work, and the home-demonstration work, and then, as far as practicable, at the rate of \$1,200 toward the necessary assistance to these leaders. Then, in

the Western States and in the Eastern States, because of the fact that the amount of the Smith-Lever money that they get is perhaps not quite proportional to their rural population, we have made an additional adjustment and contributed at the rate of \$300 to \$600 toward the salary of each county agent and in some cases also each county home-demonstration agent and a part of the county club agents in the Western and in the Eastern States.

Our relationship to this whole work is in considerable degree supervisory, and therefore it seemed desirable to the department that it should join with the college in the payment of the leaders who supervise or develop this work. If Congress should desire that we put all of that money into the county, the result would probably be that we would contribute \$300 to \$600 toward each county, and then the State would take from its Smith-Lever or other extension moneys enough to pay the entire supervision of the work at the college. The total or net result would practically be no different from what it is now, except that the Federal money would go directly into the county; and whichever way seems to Congress the better way is entirely satisfactory to the department.

Mr. ANDERSON. I am just trying to find out what the facts are.

Mr. SMITH. Those are the facts as far as they relate to the North and West, and that is the general plan of handling the work, and those are the reasons for it.

Mr. ANDERSON. I realize it is difficult, of course, to take this thing up item by item and get any accurate view of the whole program. At the same time I think we ought to know where these items of expenditure go and what they are used for and what the cost of administering this work is; and if there is too much supervision, too much money being spent in overhead, then we ought to know that. The only way we can know it is to find out what is being spent. If I should want to do that, I will do it at the proper time. What I am interested in is what you are doing with the money.

Mr. HARRISON. You are interested in knowing what percentage of the total appropriations goes for administration.

Mr. ANDERSON. There are so many ideas of administration and what constitutes administration that I really am unable to tell just what somebody's particular idea of administrative expense is.

Dr. TRUE. We will be very glad to give the facts if you will indicate what you would like to have us show.

Mr. ANDERSON. I suppose the situation is the same with reference to the home demonstration item as it is with the boys' and girls' club work and the other. You have not the total figures with respect to the amount of that, that actually gets out into the county?

Dr. TRUE. No; I have not; I can give that to you.

Mr. ANDERSON. I would like to have those figures.

Dr. TRUE. Very well; I will send you a statement showing it in detail.

FIELD WORK, CLERICAL SERVICES, ETC.

Mr. ANDERSON. What does the \$108,680 for field work consist of?

Mr. SMITH. That consists of assistance that the Washington office gives direct to the States in the general development of this work.

Mr. ANDERSON. That is supervision?

Mr. SMITH. Supervision in a sense; yes. The county-agent work, the club work and the home-demonstration work are relatively new enterprises. The States have taken it up recently. Some of them make a great deal more progress in the handling of that work—the organization of it—than others do. Our office is the clearing house, which keeps in touch with all progress made in all of the States and transfers all such information from State to State. We try to put on demonstrations with the State leaders in the handling of that work, just as the State leader puts on demonstrations with the county agent, and just as the county agent puts on demonstrations with the farmer. The leaders of this work are just as much in need of demonstration work on how to handle it as the farmers are themselves in learning how to put a new farm practice into operation. We have in that work four men giving their time to aiding the State leaders in the general development of the county-agent work in the 33 States.

Mr. ANDERSON. What do you mean, that the supervisors go around and interview all the county agents to find out what they are doing—kick their feet up on the roll-top desk and have an interview?

Mr. SMITH. They hardly do it in just that way, but they do advise with the State leader and go with the State leader out to the county agent and help the State leader analyze the work of the county agent and help to teach the State leader the best things in the handling of the county agent work.

Mr. ANDERSON. How many men are employed out of this \$108,680?

Mr. SMITH. There are four in the county agent work; five in the men's work; four in the boys' and girls' club work. There is now one in farm management; we expect another—we usually have two. When we are cooperating with some of the bureaus in the employment of others, paying the traveling expenses of specialists in the different States to make studies of extension methods in their respective lines in the States, particularly giving their attention to the Smith-Lever work. These men advise us as to the methods and efficiency with which that work is being carried on.

Mr. ANDERSON. When you say you are cooperating with them, do you mean you are paying part of the salaries of these people?

Mr. SMITH. We are paying their traveling expenses when they go to the field. The bureaus are paying all of their salaries.

Mr. ANDERSON. You have 14 men here. That does not quite take \$108,680.

Mr. SMITH. No. I have not just the figures that Dr. True has there, and I do not know whether that includes the whole office or not. It includes the clerical force, I think. It likewise includes the expense of the office and the traveling expenses of these men. It includes such matters as freight, express, drayage, telephone and telegraph, labor, acquisitions, etc.

Mr. ANDERSON. All I have out of that now is for these 14 or 15 men. I do not know how much they are paid.

Mr. SMITH. Then, in addition to that, we have the expenses of the office here in Washington, the clerical expenses.

Mr. ANDERSON. How many clerks are carried under this item?

Mr. SMITH. I would have to total that up.

Dr. TRUE. We carry about 12 clerks.

Mr. SMITH. Freight, \$4,000; express, drayage, telephone and telegraph, etc., in all amounting to \$10,000; then for supplies here in Washington about \$5,000. If you want more detail than that we can give you a specific statement showing it.

Mr. ANDERSON. I would like to know what people are paid under this item and how much they are paid. I do not mean the names but the classes of the positions.

Mr. SMITH. Yes.

Mr. ANDERSON. Such a statement as field work is a very general term. It does not seem to me it is field work. I would scarcely consider 12 clerks in Washington as representing field work at all.

Mr. HARRISON. Have you noticed the tables on page 227 of the estimates?

Mr. ANDERSON. Yes; but that does not give any information.

Mr. HARRISON. It gives the salaries of all people that are paid under this fund—the total fund. It does not segregate those attached to the Washington office from those in the field.

Mr. SMITH. We can give that to you just exactly the way you want it.

Dr. TRUE. Our difficulty seems to be that we did not separate our information with regard to the personnel, etc., according to these divisions or funds which I stated. Do you desire to have us make up a statement showing the personnel and other expenses under each of these items?

Mr. ANDERSON. I am taking your own division of that proposition and trying to find out what that represents. As far as I have been able to discover there is not anybody yet in Congress at least who has been able to understand your system on this proposition. I am going to try to understand it if it takes until the 4th of March. The statement was made, for instance, in the debate on the bill last year that only 18 per cent of some of these funds got out into the counties. I do not know whether that is true or not. But that statement was made by a member of the Agriculture Committee and called to my attention this morning.

Mr. SMITH. The real trouble, as far as we are concerned, is with the form of estimate that is required, as I understand it, for Congress, and it is a form of statement that we do not use ordinarily. I can make up a statement for you that will give you just exactly what is on your mind, because we have the data for it.

Mr. ANDERSON. These general subdivisions which are allotted to the States and amounts allotted to field work and for general supervision involve a question of opinion as to what constitutes field work, what constitutes general supervision, and how much allotted to the States gets out into the counties?

Mr. SMITH. Let me show you how we put up these estimates for our own use [exhibiting statement]. Here is a statement for county-agent work. There is the amount that is allotted Arizona for this work: One State leader, \$1,500, and eight county agents, at \$600 each: total, \$6,300. In California there is one leader, \$1,500; two assistant leaders, \$2,400; and 36 county agents, at \$300 each; total, \$14,700. So we have got to multiply that in order to show you just the amount that goes into the counties. We must multiply and add total for all the States in each line of work.

Mr. ANDERSON. In general, you have one supervisor for each State?

Mr. SMITH. We have here in Washington about one man to each eight States. In the county-agent work, for instance, there are four men working in 33 States. One is the leader in charge and he has three assistants. One of these assistants works with the 11 Western States, one in the 12 Central States, and the other in the 10 Eastern States, while the leader works in all 33 States, as occasion demands.

Mr. ANDERSON. It is very difficult to arrive at an understanding of this thing unless you have some sort of statement in front of you, because you may be talking about one thing and I about something else.

Mr. SMITH. Yes. In the States handling the county-agent work there is usually a leader who has an assistant for each 12 or 13 counties organized for county-agent work. All the time there are agents coming and going. New counties are taking on the work and old counties have to be reorganized. The new county agents have to be given special assistance at the start, so that when they go on the job they can begin to work efficiently as soon as possible. The viewpoint of the colleges seems to be that about 1 leader to reach 12 to 15 organized counties is needed if the work is going to be done efficiently. Practically all of the States have reached this decision independently of each other. With that fund of \$285,685 we cooperate with the States in the employment of about 1,180 county agents in the Northern and Western States.

Mr. ANDERSON. With which fund—the one we are talking about now?

Mr. SMITH. Yes. We are cooperating with that money in various amounts; it goes to 1,180 county agents in the northern and western States, in amounts ranging from \$1 to \$600 per county, and in amounts ranging from \$1,200 to \$1,500 for State leaders and assistant State leaders in all 33 States.

Mr. ANDERSON. What does this \$44,856 consist of that Dr. True is talking about for general supervision?

Mr. SMITH. That means the work of my own office as general leader of this entire project, covering extension work in all the northern and western States. Our office is divided into these five sections—county agent work, home demonstration work, boys' and girls' clubs work, farm management work, and what we call our co-operative specialists and Smith-Lever projects. The plans for expansion work for each of the 33 northern and western States come into my office each year preparatory to going to Dr. True for final approval.

Mr. ANDERSON. As I understand it, part of your policy is to pay the expenses of the men in the different bureaus who go out and talk to these farmers' meetings and discuss with people in the State colleges various problems connected with this work.

Mr. SMITH. Yes.

Mr. ANDERSON. To what extent is that done?

Mr. SMITH. Each one of our men spends probably 60 per cent of his time in the field.

Mr. ANDERSON. I am not talking about your men. I am talking about men in the other bureaus whose traveling expenses I understand are paid out of this fund.

Mr. SMITH. That depends on how large the project is. Let me illustrate: Suppose that of these 33 States 18 are carrying on dairy work. We would like to have a man competent to study that work, visit those 18 States, carry to them what the department may have along dairy lines that is significant, and at the same time carry from State to State the good things that he finds in dairy work—good methods of organization to each of the States—and make a report to us on the work. We estimate for their traveling expenses at the rate of about \$900 each per year. That does not take all of their time. They are employed the remainder of their time by the bureau concerned. That is a rough estimate.

Mr. HARRISON. How many are there?

Mr. SMITH. There are 10 or 12 of these people; the number varies.

Mr. ANDERSON. These men go out from the other bureaus whose traveling expenses are paid out of this appropriation, and you also have several specialists.

Mr. SMITH. Yes and no. The men from other bureaus are what we call subject-matter specialists. The men in my own office are essentially organization men, in charge of the development of the organization in the States, like the county agents' organization, the home-demonstration organization, and the boys' and girls' clubs organization. We are creating in the field the organization through which subject-matter departments function. If a man wants to do dairy work, we have the county agents' organization through which he can extend his subject, the boys' and girls' clubs organization through which he may extend his subject, and the women's organization through which he may extend his subject.

Mr. ANDERSON. The colleges are furnishing these men all the time, are they not?

Mr. SMITH. Yes, sir; each one in the State, in so far as they have them and in so far as their own information goes, but among the 33 States you will find some very efficient, some modestly so, and some without men at all in the different lines depending upon their funds. Our men that go from here serve to keep the whole system toned up and on an efficient basis. That is the purpose of it.

Mr. ANDERSON. This item of general supervision is the item that refers entirely to the expense of the local office here.

Mr. SMITH. Yes.

Mr. ANDERSON. Does that include clerical help?

Mr. SMITH. Yes; that includes clerical help.

Mr. ANDERSON. I take it that does not include the salary of the expenses of either subject-matter specialists or other kind of specialists.

Mr. SMITH. It does not include the salary of subject-matter specialists. It includes the salary and all the traveling expenses or organization specialists.

Mr. ANDERSON. And the Washington office force?

Mr. SMITH. Yes; the Washington office force. It includes also the clerical expenses of the county agents' section of my force as well as of the other sections. I have the details here. Perhaps I had better explain that to you gentlemen. This has been made up in the last few days [exhibiting statement] and covers the current year's work as it is now in operation. It includes freight, telephone supplies, etc. The county-agent work includes the salary of the leader of that work, Mr. Lloyd, \$4,000 a year, his travel expenses, and his clerical staff.

We are getting in right now reports from 1,180 county agents. These are being tabulated up in our office, and that takes some clerical help. That [indicating] is the amount that is spent for the three men who work entirely in the field, except such time as they have to be in here making out their reports.

Mr. BYRNES. Why do you put that under the head of Washington?

Mr. SMITH. Because they are located here in Washington and their work is in the field.

Mr. BYRNES. Traveling expenses, \$5,900.

Mr. SMITH. Yes, sir; for those three men in the county-agent group.

FOR SUPERVISION AND COUNTY AGENTS.

Mr. ANDERSON. \$285,685 in the field. I suppose that means the amount which you are allotting to the States for county-agent work.

Mr. SMITH. Yes, sir; and for both supervision and county agents, \$314,485.

Mr. ANDERSON. The supervision would mean in most instances, I understand, one supervisor in the State and two assistants.

Mr. SMITH. A leader in the State and an assistant for each 12 or 15 counties that are organized for county-agent work. That would mean, in Minnesota, Mr. Balmer and the assistants that are handling that work.

Mr. ANDERSON. How many assistants has Mr. Balmer?

Mr. SMITH. I can not tell offhand.

Mr. ANDERSON. On your figures he ought to have six or seven.

Mr. SMITH. Probably four or five assistants.

Mr. ANDERSON. There are 106 counties up there.

Mr. SMITH. There are about 75 or 78 of them organized. There are four women that travel out from the Washington office into the States. Three of those are engaged in the development of home-demonstration work and one of them is a subject-matter woman, the only one in the department. She represents Dr. Langworthy in a way and deals with the 33 States.

Mr. ANDERSON. You give in this item salaries, \$10,800, and field, \$103,152, making a total of \$131,717, with the other items that are included.

Mr. SMITH. Yes.

Mr. ANDERSON. Are there some more State leaders and assistant State leaders connected with this home-demonstration work?

Mr. SMITH. Yes. There is a State leader in every one of the States, and we are putting \$1,500 into practically every one. That is practically unchanged. We are not cooperating with the States in the employment of assistant State leaders. The reason for this is that there are now only about 250 counties organized, and there is as yet, perhaps, no occasion, or only rare occasion, for the employment of assistants.

Mr. ANDERSON. Boys' and girls' club work, Washington administration, \$9,100; four field men located in Washington, salaries, \$11,820.

Mr. SMITH. Again one of those is a woman engaged in home-economics work for the girls.

Mr. ANDERSON. Traveling expenses, \$5,150, and \$110,470 in the field, making a total of \$136,540.

Mr. SMITH. Yes.

Mr. ANDERSON. You have supervisors in the State under this work?

Mr. SMITH. Yes, sir; a leader and frequently an assistant. We put our money for the most part into the one leader of the work, as we have not enough money to put into the assistants.

FARM-MANAGEMENT DEMONSTRATION.

Mr. ANDERSON. Farm-management demonstration. That seems to be a new proposition.

Mr. SMITH. No. That work has been here since 1914. This work was originally in the office of farm management, but has been with us since 1914. We have spent around \$45,000 to \$50,000 every year since 1914 for this work.

Mr. ANDERSON. Under this item you have \$7,200 for Washington administration; \$3,000 for Washington; one agent in the field located at Washington; \$700 traveling expenses and \$36,391 in the field, making a total of \$47,291. What is this \$36,391 to do with the farm-management proposition?

Mr. SMITH. Employment of extension specialists for farm management demonstration work. We put \$1,500 into each one of the leaders in each State and he works with the county agents. He is the man who helps the farmers in their study of the cost of producing farm crops and products on their farms. It is through him that the farm account book the farmers use are distributed. These books are so devised as to help them in making up their income-tax return. The farm management demonstrator is the man who works all of that out.

SPECIALISTS IN PROJECT AND COOPERATIVE RELATIONS.

Mr. ANDERSON. Then you have specialists in projects and cooperative relations?

Mr. SMITH. Yes.

Mr. ANDERSON. Washington, \$3,800; two field men, \$3,000; other expenses, \$7,531. That seems rather high.

Mr. SMITH. That includes, in addition to salary, the expenses of a number of those subject-matter men sent out from other bureaus. That is why that item appears so large.

Mr. ANDERSON. That makes a total of \$14,331?

Mr. SMITH. Yes.

FIELD ENVELOPES.

Mr. ANDERSON. Then you have \$25,000 for field envelopes; \$1,500 for civil-service retirement and disability fund. That makes the totals on this whole business: Washington, administration, \$85,456—

Mr. SMITH. Yes.

Mr. ANDERSON. Washington, field, salaries, \$41,820; traveling expenses, \$27,746—

Mr. SMITH. Yes.

Mr. ANDERSON. Amounts allotted to States, including \$25,000 for envelopes, \$560,698—making a grand total of \$715,720?

Mr. SMITH. Yes.

Mr. ANDERSON. Then, if you can tell us how much of this total of \$560,698 actually goes to the field—

Mr. SMITH. Into the counties?

Mr. ANDERSON. Into the counties—and how much of it is spent for State agents, or whatever you call them, or assistants, we will have the information we want, I think.

Mr. SMITH. I will give you that.

Mr. ANDERSON. I would also like to have a copy of the statement you have there inserted in the record.

(The statement referred to is as follows:)

Summary of allotments to the various lines of work for year 1920-21. as of Dec. 27, 1920.

Line of work.	Wash- ington adminis- tration.	Washington field.		Staff in States.	Total.
		Salary.	Expense.		
Supervision.....	\$44,856				\$44,856
County agent work.....	9,700	\$13,200	\$5,900	\$285,685	314,485
Home demonstration work.....	9,300	10,800	8,465	103,152	131,717
Boys' and girls' club work.....	9,100	11,820	5,150	110,470	136,540
Farm management demonstrations.....	7,200	3,000	700	36,391	47,291
Projects and cooperative relations, including travel (specialists).....	3,800	3,000	7,531		14,331
Field envelopes.....				25,000	25,000
Civil-service retirement and disability fund.....	1,500				1,500
Total.....	85,456	41,820	27,746	560,698	715,720

The above table shows the amount of money to be spent for each of the various lines of work in 1920-21. It shows the leader of each of the four lines of work, viz, county agent, home demonstration, boys' and girls' clubs, and farm management demonstrations, as charged against the Washington supervisory force for both salary and travel. As a matter of fact, all of the work of these leaders might properly be classified as "field work," since it is practically all done in the field or for the field staff. Washington is simply a place to return to for further information and instruction and for the preparation of such literature and tabulation of such data as are essential to maintain the work in the States in the highest state of efficiency. The clerical staff that aids these groups is primarily for the purpose of relieving the leaders of routine, thus permitting them to do more direct field work.

The following table shows more completely the detailed distribution of the funds for the staff having headquarters in Washington:

Funds spent for Washington supervision and field staff with headquarters in Washington—Estimates for year 1920-21, as of Dec. 27, 1920.

	Salary.	Travel.	Supplies.	Total.
Washington supervision:				
Chief, assistant chief, and six part-time assistants.....	\$16,015	\$3,976		\$19,991
Three clerks.....	4,400			4,400
Three subclerks.....	700			700
Supplies, including freight, telegraph, telephone, etc.....			\$19,765	19,765
Washington field staff:				
County agent work—				
Leader and three assistants.....	17,200	7,400		24,600
Four clerks.....	4,200			4,200
Home demonstration work—				
Leader and four assistants.....	14,400	10,365		24,765
Three clerks.....	3,800			3,800
Boys' and girls' club work—				
Leader and four assistants.....	15,820	6,650		22,470
Three clerks.....	3,600			3,600
Farm management demonstrations—				
Leader and one assistant.....	6,600	2,200		8,800
Two clerks.....	2,100			2,100
Projects and cooperative relations—				
Leader and 10 part-time assistants.....	3,000	8,731		11,731
Two clerks.....	2,600			2,600
Civil-service retirement and disability fund.....				1,500
Total.....	94,435	39,322	19,765	155,022

Total Washington supervision, including supplies, etc.....	\$44,856
Total Washington field staff (including 14 clerks, \$16,300).....	108.686
Total civil-service retirement and disability fund.....	1.500
Grand total.....	155.022

The above table shows the total amount of funds estimated as necessary to maintain the work of the Washington office, including the field staff that work out from Washington. The amount of funds available for the employment of county agents and the leaders who aid them and supply them with penalty envelopes is \$560,698. The proportion of this spent for the staff with headquarters at the colleges and in the counties, respectively, is shown in the following table.

Funds spent for work in States and counties—Estimates for year 1920–21, as of Dec. 27, 1920.

	Staff with headquarters at college.	Funds spent in the counties.	Field supplies (penalty envelopes).	
			College.	Counties.
County agent work.....	\$101,700	\$183,985	\$6,250	\$6,250
Boys' and girls' club work.....	77,100	33,370	2,500	2,500
Farm management demonstration.....	36,391		1,250	1,250
Home demonstration work.....	46,944	56,208	2,500	2,500
Total.....	262,135	273,563	12,500	12,500

Total spent for staff with headquarters at college, including supplies of envelopes.....	\$274.633
Total spent for county agents, including supplies of envelopes.....	286,063
Total spent exclusively in the field.....	560,698
Total for Washington supervision and field staff working out of Washington.....	155.022
Grand total.....	715,720

COUNTY AGENTS, DIRECTORS, STATE LEADERS, ETC.

I would now like to ask you some general questions: How many counties have you now that have county agents?

Dr. TRUE. About 2,000 in the 48 States.

Mr. ANDERSON. How many less is that than you had last year; how many did you have last year?

Mr. SMITH. Of that number we have to-day 1,180 in the Northern and Western States. There is no decrease.

Mr. ANDERSON. We will take it separately. How many agents did you have last year in the North and West?

Dr. TRUE. In the North and West—this is the data for the 1st of December—

Mr. ANDERSON. This year?

Dr. TRUE. This year. In the North and West, 33 States, our record showed 1,168 county agents and assistants—very few assistants, however.

Mr. ANDERSON. What I want to know is in how many counties you have agents?

Mr. SMITH. It is stated right there.

Mr. ANDERSON. One thousand one hundred and sixty-eight?

Mr. SMITH. Yes; because there are 160 counties now without agents, but most of them have the money and are looking for agents. So if I were to give you the exact figure to-day, it would not be right 20 minutes from now; but those are the facts on that date.

Mr. ANDERSON. You had 1,168 counties with county agents on December 1?

Mr. SMITH. Yes.

Mr. ANDERSON. How many counties with home-demonstration agents?

Dr. TRUE. Two hundred and forty-four agents, and then there are 11 women still employed in the cities, making a total of 255.

Mr. ANDERSON. Can you give me the same figures for last year?

Dr. TRUE. For the same month last year we had 1,133 county agents.

Mr. ANDERSON. According to the statement you have handed me, on December 1 this year you had 1,168 county agents; last year you had 1,133; and in 1918, 1,307?

Dr. TRUE. Yes; but in 1918 the emergency funds were still in force.

Mr. SMITH. We held our own in the county-agent work in the Northern and Western States last year. There has been no decrease in them since the close of the war and there is a steady growth upward, notwithstanding the decrease in funds.

Mr. ANDERSON. According to these figures, also, you have 31 directors and State leaders and 62 assistant State leaders and district agents—93 altogether. That is pretty nearly one leader for each 10 county agents—not quite. Now, under home-demonstration work, you had 244 home-demonstration agents in the counties and 11 in the cities, making 255, and you had 29 State leaders and 20 assistant State leaders—49 in all. That is 49 State and assistant State leaders for 255 agents?

Mr. MERRITT. These women also work in the unorganized counties.

Dr. TRUE. Yes; that should be stated. The women's work in the Northern States is in process of development, and these people connected with the colleges go out into the unorganized territory, partly to help organize that and partly to give demonstrations and to attend meetings of women, and so on.

Mr. ANDERSON. Let me ask you this question: Do the States, in addition to the leaders, part of whose salaries are paid out of these funds, have other leaders and supervisory forces?

Mr. SMITH. I did not get that clear. Take home demonstration work, for instance——

Mr. ANDERSON. Take any of it you want to. What I want to know is whether the States have an additional supervisory force which they pay for out of their own funds and to which you do not contribute.

Mr. SMITH. Rarely in these three lines, because they ask us to appoint the leaders as agents of the Federal Department of Agriculture, although we may give them but a dollar a year and the privilege of using the penalty envelope in our official business.

Mr. ANDERSON. So that the figures as to the numbers of persons engaged in the work would be practically complete?

Mr. SMITH. Yes.

Mr. ANDERSON. Even though you only contribute a small amount to the actual payment of their salary?

Mr. SMITH. Yes.

Mr. ANDERSON. We may as well get these figures for the whole business. Under this fund, in 1920, you had 213 county leaders in boys' and girls' club work, 29 State leaders, and 58 assistant State leaders.

Dr. TRUE. There it should also be said it is only a comparatively few counties where there are paid county leaders; but a large amount of club work is going on in the other counties with the help of the county agents and home demonstration agents, and these leaders and assistant leaders deal with all the club work.

Mr. ANDERSON. In 1920, then, in the 48 States, you had 2,008 county agents and assistants, 150 local agents (colored), 126 assistant State leaders and district agents, and 60 directors and State leaders, making a total of 2,344.

In 1919 you had 2,079 county agents and assistants, 145 colored agents, 130 assistant State leaders and district agents, and 59 directors and State leaders. That makes a total of 2,413.

COOPERATIVE WORK AGAINST THE BOLL WEEVIL.

We will take up the boll-weevil item now.

Dr. TRUE. Mr. Evans is here, who is in charge of that office.

Mr. BYRNES. Mr. Evans, what we want to know is the method by which you cooperate with the States in the expenditure of this fund?

Mr. EVANS. Under the agreement that the Secretary had with all the colleges after the passage of the Smith-Lever bill, we put all our moneys in with that of the States—that is, we cooperate in all lines of extension work. We do not do independent work, but we cooperate with them in all lines of extension work carried on in the States, and we assist in the payment of county agents, home-demonstration agents, and Negro agents, and also put some money into the leaders.

Mr. BYRNES. Have you a statement there showing how much is spent by the college?

Mr. EVANS. This is not full.

Mr. BYRNES. I want to know how much of this fund is spent at the office in Washington, how much is spent at the headquarters or at the agricultural colleges in the States, and how much is spent in the field; and, when spent in the field, whether it is spent with the county agents or whether it is spent with the county agents and supervisors of those agents.

ALLOTMENTS TO STATES.

Mr. EVANS. I will give it to you as nearly as I can; I can not give you all the details of our present funds. We have allotted to the 15 States \$496,300, and have a reserve of about \$20,000 that is held back to put where most needed after the 1st of January. That sum is spent as follows at the present time: For administration in the States—that means the amounts we contribute toward the salaries of the directors—\$16,007.67, or 3.22 per cent; in county agents' work, \$276,110.94. That is for county agents. In the home-demonstration work, which includes the girls' club work, \$180,859.39; and in boys' club work, \$23,322. That makes a total, as now allotted to the States, of \$496,300.

Mr. BYRNES. That \$16,000 item there you say is allotted to pay a part of the expenditures of your State directors?

Mr. EVANS. That is the sum we carry under the head of administration. It means the amount we pay on the salaries of directors in the States and other administrative expenses.

Mr. BYRNES. That is, the director of the extension work at the college?

Mr. EVANS. Yes.

Mr. BYRNES. How do you pay—in what proportion?

Mr. EVANS. In varying proportions. We do not have any fixed rule as to that. The States send on their requests for appointments, and they very largely adjust the salaries as they please. In some States it runs a good deal higher than in others. In your State, for example, we are paying \$1,200.

Mr. BYRNES. You pay a different percentage of the salary in different States?

Mr. EVANS. Yes.

Mr. BYRNES. And you leave that to the option of the States?

Mr. EVANS. Yes. In the adjustment of their funds some want to pay more and some want to pay less.

Mr. BYRNES. The State is entitled to so much money?

Mr. EVANS. We allot the State so much money.

Mr. BYRNES. And if they prefer to ask for only \$1,200, for instance, of the salary of the director, you let them make that decision?

Mr. EVANS. Yes. We pay less than that frequently. In a good many of the States we only pay \$600 of the salary of the director.

Mr. BYRNES. And, following that policy, you pay \$16,000 in all?

Mr. EVANS. That is, during the present year—\$16,007.67, according to the way our books stand now, we would be paying out for administration within the States.

Mr. RUBEY. How many of those States are there?

Mr. EVANS. Fifteen.

Mr. BYRNES. What is the largest amount you contribute to administration in any one of the States?

Mr. EVANS. The largest amount seems to be in Oklahoma—\$3,600.

Mr. BYRNES. As to your county agents, what is your rule there?

Mr. EVANS. There, again, there is no set rule. We could not very well make a set rule for the State without embarrassment to them. They pay different amounts. I have a table here to give you some idea of that: The average amount we pay from this direct fund on the salary of the county agents in all States is \$204.31. In some States they pay as little as \$120 a year and in others as high as \$400 a year, but taking the 15 States, that is the average amount that goes out of this direct fund toward county agents' salaries.

Mr. BYRNES. Do you have anything to do with fixing the salary, or is that left entirely with the States?

Mr. EVANS. It is practically left entirely with the States.

Mr. BYRNES. They do not consult you about that?

Mr. EVANS. No; except that the request must come to us for approval before appointments can be made.

AVERAGE SALARY OF COUNTY AGENTS.

Mr. BYRNES. What is the average salary paid?

Mr. EVANS. The average salary in the 15 States is \$2,484.13 for county agents, with \$181 for travel. And there, again, it varies.

Mr. BYRNES. Who fixes the amount for travel—the State agent?

Mr. EVANS. We pay no travel allowance to county agents from our funds; that is with the State. In a great majority of the cases in the southern territory, the county agent has no separate travel allowance; it is included in his salary.

Mr. BYRNES. What is the item you mentioned for travel?

Mr. EVANS. I say that is the average. Some States give a travel allowance and some do not. South Carolina gives an average of \$390.91 a year.

Mr. BYRNES. The State does?

Mr. EVANS. Yes; that comes out of Smith-Lever funds or county funds.

Mr. BYRNES. What other expenses or what other appropriation is made to county agents, if any? Is any allowance made out of those funds for any other purpose, for office expenditures, automobile, or any other expenses?

Mr. EVANS. No. Usually the travel expense covers the running expenses of an automobile. The agent owns his own automobile, as a rule, and he is given traveling expenses to cover expense of running it. Where he has traveling expenses at all, that is what it consists of usually.

Mr. BYRNES. Do you have such a thing as a supervisor there?

Mr. EVANS. Yes.

Mr. BYRNES. How many of those?

Mr. EVANS. That varies. Usually we call them district agents. The State is districted for purposes of administration, and there are usually about three such agents. It depends on the size of the State—one district agent for anywhere from 12 to 15 or 20 counties.

Mr. BYRNES. What salary is he paid?

Mr. EVANS. Usually he is paid a salary ranging around \$2,500 a year.

Mr. BYRNES. And expenses?

Mr. EVANS. Expenses of travel.

Mr. BYRNES. Is he allotted funds to pay the expense of an office, too?

Mr. EVANS. No; he usually offices at the central office, at the college—not always; sometimes they have different offices out in the State.

Mr. BYRNES. If the State is divided into districts, it might be very inconvenient to have the man located at the college.

Mr. EVANS. It is quite inconvenient at times, but the State determines that policy.

Mr. BYRNES. It would increase the travel allowance, too, would it not?

Mr. EVANS. It would somewhat; but, on the other hand, where they have that arrangement they figure it has the advantage of having them together for frequent conference.

Mr. BYRNES. How many county agents are receiving any part of these funds?

Mr. EVANS. This table does not include a few assistant county agents we have. We have 807 county agents receiving part of this fund at this time. This statement is made as of December 1. There are some assistant county agents not included in that.

Mr. BYRNES. That does not include your district agents to whom you refer?

Mr. EVANS. No; that does not include the district agents.

Mr. BYRNES. Do you pay, as a general thing, about the same average amount toward the salary of the district agent?

Mr. EVANS. Usually we pay a little bit more to a district agent—probably about \$600.

Mr. BYRNES. How about your home demonstration work now?

Mr. EVANS. You mean as to the average salaries and things of that sort?

Mr. BYRNES. As to the average salary and as to the number toward whose salaries you are contributing.

Mr. EVANS. On December 1 we were contributing, according to the table prepared in my office, to the salaries of 513 home demonstration agents an average amount of \$196.49 per year. It ranges all the way from \$120 a year to \$600 a year. It depends on the State; there are different amounts in different States.

Mr. BYRNES. In practical operation the State requires an appropriation from the respective counties, does it not?

Mr. EVANS. Yes.

HOME-DEMONSTRATION WORK.

Mr. BYRNES. That is the way they secure their part of the funds?

Mr. EVANS. Yes. Take this home-demonstration work, for example: The average salary of home-demonstration agents is \$1,772.21. That is made up as follows: \$196.49 from our office; \$686.19 from the college or the State, which means Smith-Lever funds; and \$859.06 from the county, with \$30.47 from other organizations, making the total average I have given here.

Mr. BYRNES. Your boys'-club work amounts to only \$23,322?

Mr. EVANS. Yes. Our boys'-club work is carried on by the county agent; we only spend money for supervisors or leaders in the club work. The county agent or home-demonstration agent, as the case may be, in the county is responsible for the club work—boys' and girls'. But we have to have men and women to lead the project and to supervise and look after the selection of agents, to look after getting the appropriations, and to direct and shape up the work and keep the policy uniform in the State, and so on.

Mr. BYRNES. What part of this fund is spent in the Washington office?

Mr. EVANS. We are spending this year about \$95,000—\$52,590 for the administration or scientific force, and \$42,720 clerical.

Mr. BYRNES. What do you call a collaborator; is he in the field or here?

Mr. EVANS. Without seeing that table, I do not know just what you mean.

Mr. BYRNES. You ask for 1,915 collaborators.

Mr. EVANS. Ordinarily a collaborator is a fellow we pay \$1 a year to, in order to give him the franking privilege, and all the rest of his salary is paid by the State or county.

Mr. BYRNES. That is the reason I am asking, because this statement shows 996 paid \$1. How many men have you receiving that \$1?

Mr. EVANS. Not very many at present. We have tried to get away from that policy as much as we can.

Mr. BYRNES. The purpose is to give the franking privilege and they are men engaged in this work at the agricultural college of the State?

Mr. EVANS. Oh, no.

Mr. BYRNES. Who are they?

Mr. EVANS. They are frequently county agents or home demonstration agents or, oftener, negro agents.

Mr. BYRNES. Your \$1 men?

Mr. EVANS. Yes; in that case the college pays all the salary from Smith-Lever or county funds, but asks us to give the franking privilege and, to do that we have to pay something and they are the collaborators.

Mr. BYRNES. I would like you to make a statement as to what you are doing—whether you are making any headway?

Mr. EVANS. Yes; we are making headway. Of course, the past year has been a very difficult one, because of the readjustments necessary following the war and the reduced appropriation. During the war, of course we had a very large appropriation and we put agents into a great many counties that had no agents before. Then, when our funds were cut down, the readjustment of those forces made some difficulties and, also, during the war all of our forces, men and women, were called upon to cooperate with all kinds of agencies, all kinds of drives and everything else. Following that, it was a little bit difficult to settle down to definite, specific project lines of work again. But I believe the results of the work this year will compare favorably with any previous year, notwithstanding all the difficulties.

COUNTY AGENTS.

Mr. ANDERSON. How does the number of county agents compare with the total number of agricultural counties in the 15 States?

Mr. SMITH. We have about 1,500 counties in the North and West, and about 1,180 of them are now with county agents.

Mr. MERRITT. I think, Mr. Evans, there are about 1,400 counties in the Southern States?

Mr. EVANS. Yes; and we have about 840 new county agents.

Mr. ANDERSON. You can insert that in the record.

I would like to ask Mr. Smith one question: Have you had any difficulty in securing competent county agents? I have heard some criticism of the character of the men who have been employed, and it has been insisted to me that some of the failures in the counties have been due to the fact the men employed were not competent?

Mr. SMITH. That is true that there has been difficulty in getting competent men. As I indicated a while ago, there are now probably between 60 and 80 counties without agents because they are not able to find competent men for those places. That situation is easing up a little now as compared with what it was a year ago, and I am looking forward hopefully to getting and keeping high-grade, competent men.

Mr. RUBEY. You have here two appropriations. I would like to have a statement made as to the difference, if there is any, between the work done under each one of these appropriations.

Dr. TRUE. In a general way, the work is carried on very much the same. The southern work is older than the northern work, and for

that reason the home-demonstration work is much better established there.

Mr. RUBEY. You are doing practically the same kind of work under these appropriations?

Dr. TRUE. Yes; it is practically the same.

Mr. RUBEY. What would be the result if they were combined? Couldn't you save something in the overhead charges and all that sort of thing by putting these two funds together and administering them as one fund?

Dr. TRUE. I doubt whether it would make very much difference. The number of people we employ and the general management of the work is such that I do not think our force would be affected materially.

Mr. RUBEY. It has always seemed to me, since this last work has been inaugurated, it would be better just to put it all under one head and to have it all done by one department or one chief, whereby you would get rid of a twin system or a dual system.

Mr. EVANS. Of course, there is a history back of that, but that is not worth while going into now.

Mr. RUBEY. I understand, of course, the people of the South have objected to that, because of the fear they would have down there they were doing away with the work on the boll weevil. The whole proposition in the South is to fight the boll weevil largely by changing the systems of agriculture and of doing agricultural work?

Mr. EVANS. We are working on several special problems. Of course, the very big negro problem is peculiar to the South and that is one line of our work—one of our problems that is not peculiar to other sections. We carry on a special line of work with the negroes, which I hope to increase, because it is a very important line of work and we are getting mighty fine results from it. And they have also special cotton and boll-weevil problems and all that sort of thing.

Mr. BYRNES. Can you get the negro to adopt the new methods that are absolutely necessary with the coming of the boll weevil?

Mr. EVANS. With difficulty, but they are doing it very rapidly; that is to say, when you can once get a negro interested as a demonstrator or cooperator, and they undertake to follow instructions, they make the best there are. Some of the best results we are able to get have been with negro demonstrators.

Mr. BYRNES. I think the negro is going to suffer more than any one else from the spread of the boll weevil.

Mr. EVANS. Unquestionably he will.

Mr. BYRNES. The boll weevil is in my country this year, and I am wondering seriously what the negro is going to do, because he loves cotton and does not know how to do anything else, and you can not induce him to try anything else.

Mr. EVANS. It is a mighty big problem.

COOPERATIVE AGRICULTURAL EXTENSION WORK AND HOME ECONOMICS.

Mr. ANDERSON. We will take up item 40; that is the \$1,500,000 supplementary fund.

Dr. TRUE. This fund is allotted to the States under the same conditions as the regular Lever fund, and it is spent for the same purposes. A proviso in this item requires that no more than \$300,000

shall be expended for purposes other than the salaries of county agents. That has been more than fulfilled. The allotment for the salaries of county agents, as I have it here, is \$1,344,597, whereas \$1,200,000 would be required.

Mr. ANDERSON. That is actually spent for the salaries of the county agents?

Dr. TRUE. Actually spent for the salaries of the county agents. Besides that, \$102,711 is spent for home demonstration work.

Mr. ANDERSON. Does that mean women demonstrators in the field?

Dr. TRUE. Yes; county home demonstration agents; and \$28,848 for club agents in the counties. That leaves \$23,844 for extension specialists.

Mr. BYRNES. What are extension specialists?

Dr. TRUE. They are men in different branches of agriculture or women in different branches of home economics who go out from the colleges to aid in the work in the counties, prepare publications for use in this work, etc.

Mr. ANDERSON. Then there is not any part of this, apparently, that is spent for administration?

Dr. TRUE. No, sir. It is offset under the law by an equal amount, which is divided in this way: County agents, \$1,212,488; home-demonstration agents, \$243,622; club agents, \$31,204; specialists, \$12,686.

Mr. BYRNES. You say that is offset: What do you mean by that—by State funds?

Dr. TRUE. By funds from sources within the State.

Mr. ANDERSON. Is there an offset also to the other two items for demonstration work in the North and boll-weevil work in the South? Is that offset, too?

Dr. TRUE. No formal offset is required there; but, as a matter of fact, from resources within the State much larger amounts are contributed to the extension work. I have a general statement about that which I may make now.

Mr. ANDERSON. All right.

SOURCE OF FUNDS.

Dr. TRUE. Cooperative extension work in agriculture and home economics, carried on in the 48 States under the Smith-Lever Act and related Federal and State legislation, is maintained for the year ending June 30, 1921, with funds aggregating \$16,836,734. To this amount the Federal Government contributes \$6,281,345 and the States, counties, farm bureaus, etc., contribute \$10,555,389. Of the funds derived from sources within the States, \$4,655,334 are given by the States and agricultural colleges, \$5,057,547 by the counties, and \$843,508 from miscellaneous sources.

The Federal Smith-Lever fund is \$3,580,000. This is supplemented by \$1,500,000 appropriated to the Department of Agriculture, to be expended under the terms of the Smith-Lever Act. Of the regular Smith-Lever fund, \$480,000—that is, \$10,000 to each State—is given without requirement of offset. The balance, \$3,100,000 and the supplemental fund of \$1,500,000, or in all \$4,600,000, must be offset by funds from sources within the States. This offset is provided by

\$3,037,388 from States and colleges, \$1,330,520 from the counties, and \$232,082 from miscellaneous sources.

The amounts not requiring offset are as follows: Federal funds, Smith-Lever fund, \$480,000; farmers' cooperative demonstration work, allotted to the States, \$1,026,850; other bureaus of the Department of Agriculture, \$174,495—making a total of Federal funds not requiring offset of \$1,681,345. From the States and colleges, \$1,617,946; from the counties, \$3,727,027; and miscellaneous, \$610,416; total from State sources, \$5,955,389. From both Federal and State sources the funds not requiring offset aggregate \$7,636,734.

These funds for the current year, according to the projects submitted to us from the States and approved by us, are being spent for the following purposes: In the county agent work, \$8,466,219, or 50 per cent; in the home economics work, \$3,145,755, or 18.8 per cent; in the boys' and girls' club work, \$1,109,109, or 6.6 per cent; for extension specialists, \$2,918,664, or 17.5 per cent; for administration, \$951,185, or 5.6 per cent; for publications, \$245,802, or 1.5 per cent. For the three lines of county work, \$12,721,083, or 75.4 per cent, are being used.

Mr. ANDERSON. It is a little bit difficult, Doctor, to follow that statement. I wonder if we can take this Smith-Lever fund, \$3,580,000, and have you give me the same information for that that you did on the other two items, as to the amount of it which is being spent for county agents, etc.?

Dr. TRUE. Yes.

(The statement follows:)

Projects.	Farm- ers' co- opera- tive dem- onstra- tion work.	Smith-Lever.				State and college.	County.	Other.	Total.
		Regular.		Supplementary.					
		Fed- eral.	State.	Federal.	State.				
County agents:									
North and West.	\$284,955	\$491,034	\$692,046	\$725,966	\$726,342	\$288,954	\$2,050,374	\$408,877	\$5,668,548
South.....	279,567	483,113	339,766	618,631	486,146	55,506	500,842	34,100	2,797,671
Total.....	564,522	974,147	1,031,812	1,344,597	1,212,488	344,460	2,551,216	442,977	8,466,219
Home demonstra- tion work:									
North and West.	101,575	373,722	286,366	36,978	40,991	132,163	376,150	35,502	1,383,447
South.....	181,329	410,127	446,755	65,733	202,631	29,204	425,929	600	1,762,308
Total.....	282,904	783,849	733,121	102,711	243,622	161,367	802,079	36,102	3,145,755
Boys' and girls' clubs:									
North and West.	125,600	223,171	135,220	26,848	31,204	132,540	233,482	39,553	947,618
South.....	21,782	71,790	59,148	2,000	.....	1,550	5,221	.....	161,491
Total.....	147,382	294,961	194,368	28,848	31,204	134,090	238,703	39,553	1,109,109

Mr. ANDERSON. Can you give me the total amount out of this \$3,580,000 spent for county agents?

Mr. MERRITT. \$974,000.

Mr. ANDERSON. Does that include any State leaders?

Mr. MERRITT. Yes.

Mr. ANDERSON. Can you say how much?

Mr. MERRITT. Not from these records; no.

Mr. ANDERSON. How much of it is for county demonstration agents?

Mr. MERRITT. Home demonstration agents?

Mr. ANDERSON. Yes.

Mr. MERRITT. \$784,000.

Mr. ANDERSON. Is there any farm-management demonstration in this?

Mr. MERRITT. No.

Mr. ANDERSON. What is the rest of it?

Mr. MERRITT. \$295,000 for boys' and girls' club work.

Mr. BYRNES. Is that spent in the field?

Mr. MERRITT. That is for the State leaders and the county club leaders.

Mr. ANDERSON. What is the rest?

Mr. MERRITT. The rest of that goes into supervision, publications, and specialists. I have not those other items here. I can furnish that from the records in the office.

Mr. ANDERSON. I would like to have a table showing of this amount of \$3,580,000 how much goes to county agents in the field, how much to the State leaders and district leaders, and to other supervision, how much goes for home demonstration work in the field and that amount that goes for State leaders out of that; the same thing for the boys' and girls' club work and whatever makes up the rest of the item—whether it is supervision, publications, or whatever it may be.

Mr. MERRITT. We will have to go back to our original records to get that. I think we can make a statement of practically what you want there.

Mr. ANDERSON. And I should like a table totaling up this whole business, giving these same figures for all four funds.

Mr. MERRITT. We can not give you that for the present year, but we can give it for last year, because that comes in when they report their expenditures.

Mr. ANDERSON. You can give it for last year?

Mr. MERRITT. I can give it for last year, I think, but not for this year, because this year our records are based on allotments, and they do not subdivide to that detail. But the percentage will practically be maintained.

Dr. TRUE. We can show that approximately, I think.

Mr. ANDERSON. Of course, I would like to get it as near as we can for this year.

Dr. TRUE. We think you should have before you the whole statement, rather than a statement as to any one fund.

Mr. ANDERSON. I would like to get the whole statement; but when you say \$974,000 goes to county agents and we find \$74,000 goes to pay State leaders, etc., we get a wrong idea of it.

Dr. TRUE. We want to give it to you just as you want it, as near as we can.

Mr. MERRITT. First, you want to know how much of the farmers cooperative demonstration work is paid for State leaders at colleges and how much goes into counties, and the same thing for the four Smith-Lever funds, i. e., two regular and two supplemental.

Mr. ANDERSON. Yes.

Mr. MERRITT. And the same thing for funds from all sources.

Mr. ANDERSON. Yes. I want it divided up so that it will show what actually goes into the payment of salaries for county agents, what goes into State leaders and what goes into Washington extension specialists and what goes into Washington administration.

Dr. TRUE. A separate statement covering this information will be furnished you.

When you have those funds presented in that way, you should take into account the whole enterprise and that involves a good many items which lead to the particular adjustment of these funds; the condition of the funds in the counties, the condition of the State appropriations and beyond that also the mere matter of bookkeeping or adjustment, because as far as the Federal funds and the off-setting funds from sources within the State, we regard those as practically pooled when it comes to the division of the fund among different lines of work.

Mr. ANDERSON. Well, you do not have the actual bookkeeping of those funds, do you? That is a county proposition.

Dr. TRUE. No; we do not require that a certain proportion of the county agent's salary, for example, shall be paid out of the Federal Smith-Lever fund and an equivalent amount out of State Smith-Lever fund. They may put all the contribution from the college on the Federal Smith-Lever fund, or they may put it all on the State Smith-Lever fund, and that is very largely a matter of bookkeeping.

Mr. ANDERSON. The salaries of these county agents are actually paid to them by the colleges, are they not?

Dr. TRUE. Only a small part is paid by the college.

Mr. ANDERSON. What I am getting at—

Mr. BYRNES (interposing). Who gives the man the check?

Mr. ANDERSON. Yes; that is what I am trying to get at, who gives the man the check? That is what I want to know, the Federal Government or the State college?

Dr. TRUE. He generally gets his money from three or four different sources.

Mr. BYRNES. Well, do you send him a check?

Dr. TRUE. We send a check simply for the small amount which we contribute on his salary.

Mr. ANDERSON. And the State college gives him a check for a part?

Dr. TRUE. Yes, sir; the State college gives him a check for a part of it.

Mr. ANDERSON. And the county gives him another check for the part they pay?

Dr. TRUE. Yes, sir.

Mr. ANDERSON. That is true also of the Smith-Lever funds?

Dr. TRUE. Yes; we do not pay out the Smith-Lever funds to him. Those are paid out to the colleges.

Mr. ANDERSON. That is what I am trying to find out.

Dr. TRUE. Certainly; we simply allot that money to the colleges and those funds are given to the colleges in a lump sum.

Mr. ANDERSON. That is what I am trying to find out. You do not issue him a check direct?

Mr. HARRISON. Only to those who are paid out of the direct funds, Mr. Chairman. These two items for farmers' cooperative demonstra-

tion work are the only specific extension funds from which money is paid out directly by the department. The remainder of the money goes to the States.

Mr. ANDERSON. That is what I am trying to get at. So that all the bookkeeping you have to do in connection with the Smith-Lever funds is the bookkeeping in connection with the allotment to the States of both regular and supplementary Smith-Lever funds and the audit of the account to see that it is spent for the purposes for which it is allotted.

All right, we will take up the next item.

Now, with regard to this increase of \$500,000 in the Smith-Lever fund this year, that, of course, is a general increase in the amount which can be spent for this extension work.

Now, can you state generally or specially what can be done with the \$500,000; why it is necessary to have that increase? What I am getting at is this: The Agricultural Committee when it had charge of these appropriations had in mind that some time when the Smith-Lever funds reached their maturity it would be possible to reduce the supplementary fund of \$1,500,000. Now, if it is not feasible to do that, I want to know why.

Dr. TRUE. Well, this extension movement is a growing movement and it has by no means reached its conclusion. We have county agricultural agents in 2,000 counties. There are at least 650 more counties which ought to have such agents. There are home-demonstration agents in only about 800 counties. The boys' and girls' club work is a growing proposition and increasingly popular.

For the past few years the extension funds have been increasing in the aggregate by about \$2,000,000 a year. What we hope is that with this additional \$500,000 the States will increase their appropriations by at least an equal amount, and that then the counties will put up \$1,000,000 more, as new counties may be organized. And so there is plenty of use for this additional fund.

Mr. ANDERSON. Well, of course, you can put a county agent and a home-demonstration agent, and a boys' and girls' pig club, and a man in charge of them in every county in the United States. You could put a half dozen in there for that matter, but all of that is more or less relative. In the counties that I know something about the county agent is doing all three things, organizing boys' and girls' pig clubs and calf clubs and the various other clubs and associations, and looking after all of them.

Now, I must say that I am not sure that it is either necessary or wise to try to establish the boys' club work, particularly on the basis of an agent for every county or anything like that.

Dr. TRUE. We do not anticipate that in the near future there will be a separate paid club leader in the counties generally; but we do expect a gradual increase in the work and on the basis of an additional sum of \$2,000,000, including this \$500,000 additional Smith-Lever fund, we hope that we will be able during the next year to add at least 200 counties with county agricultural agents and 200 counties with home-demonstration agents and perhaps 150 additional counties with the club agents.

Mr. HARRISON. Mr. Chairman, you have in mind the change that occurs next year in the basis of apportionment?

Mr. ANDERSON. Of course, we know that will reflect in the situation to some extent.

Mr. HARRISON. There will be a decrease in some States and an increase in others.

Mr. ANDERSON. Of course that is a matter largely of legislation. We will have to deal with it, so far as appropriations are concerned, in more or less of a general way, and from that point of view it is just a question as to how far this work can or ought to be developed.

It rather seemed to me that so far as the boys' and girls' clubs are concerned, I think that is a very excellent development that ought so far as possible be put on the basis of self help and development, and that a whole lot of that work can be done and normally is done by the county agents.

All right, we will now take up item No. 41.

Before we go to that, though, I wish you would put in the record anything you can with regard to the apportionment and the distribution of funds for the next fiscal year under the four appropriations.

Mr. HARRISON. You want them separately?

Mr. ANDERSON. A statement similar to the one you put in on this item here.

(The statement referred to follows:)

Maximum amounts of Federal funds which each State is eligible to receive under the cooperative-extension (Smith-Lever) act.

State.	1920-21	1921-22 ¹	State.	1920-21	1921-22 ¹
Alabama.....	\$121,041.07	\$140,453.20	Nevada.....	\$14,303.54	\$14,104.00
Arizona.....	18,863.27	25,314.40	New Hampshire.....	21,022.86	21,559.60
Arkansas.....	96,171.76	113,449.60	New Jersey.....	49,572.67	57,444.40
California.....	67,026.85	87,490.00	New Mexico.....	27,634.90	30,930.40
Colorado.....	34,761.87	44,434.00	New York.....	131,120.72	137,202.40
Connecticut.....	17,218.85	17,570.80	North Carolina.....	128,588.70	156,949.40
Delaware.....	16,610.76	17,203.60	North Dakota.....	42,277.14	49,456.00
Florida.....	43,515.89	53,354.80	Ohio.....	142,042.14	157,369.60
Georgia.....	140,062.92	163,000.00	Oklahoma.....	93,987.74	115,314.40
Idaho.....	26,062.34	32,075.20	Oregon.....	32,972.86	37,781.20
Illinois.....	145,791.35	157,085.20	Pennsylvania.....	200,617.70	230,328.00
Indiana.....	107,810.27	112,459.60	Rhode Island.....	11,127.96	11,076.40
Iowa.....	107,036.08	118,237.60	South Carolina.....	91,070.95	108,186.40
Kansas.....	85,203.20	91,486.00	South Dakota.....	41,862.24	47,792.80
Kentucky.....	118,955.57	136,194.40	Tennessee.....	119,538.56	132,169.60
Louisiana.....	82,860.91	92,821.60	Texas.....	195,843.27	232,858.00
Maine.....	32,672.78	34,094.80	Utah.....	22,589.79	26,552.80
Maryland.....	50,024.78	51,061.60	Vermont.....	21,747.77	22,733.20
Massachusetts.....	25,142.20	24,356.80	Virginia.....	109,571.81	125,560.00
Michigan.....	103,167.27	110,897.20	Washington.....	43,699.36	53,117.20
Minnesota.....	86,978.09	104,467.60	West Virginia.....	72,370.58	87,724.00
Mississippi.....	109,868.30	119,868.40	Wisconsin.....	93,519.09	108,424.00
Missouri.....	129,009.92	138,649.60	Wyoming.....	16,454.20	19,504.00
Montana.....	25,241.71	36,578.80			
Nebraska.....	65,365.44	72,928.00	Total.....	3,580,000.00	4,080,000.00

¹ Approximate, based upon a preliminary census statement.

Distribution of supplementary extension funds, by States.

State.	1920-21	1921-22 ¹	State.	1920-21	1921-22 ¹
Alabama.....	\$53,720.55	\$54,355.50	Nevada.....	\$2,082.36	\$1,710.00
Arizona.....	4,288.68	6,381.00	New Hampshire.....	5,333.64	4,816.50
Arkansas.....	41,696.01	43,104.00	New Jersey.....	19,148.07	19,766.80
California.....	27,393.64	32,287.50	New Mexico.....	8,533.02	8,721.00
Colorado.....	11,981.55	14,347.50	New York.....	58,606.80	53,001.00
Connecticut.....	3,492.99	3,154.50	North Carolina.....	57,381.63	61,228.50
Delaware.....	3,198.75	3,001.50	North Dakota.....	15,617.97	16,440.00
Florida.....	16,217.37	18,064.50	Ohio.....	63,891.36	61,404.00
Georgia.....	62,933.67	63,750.00	Oklahoma.....	40,639.23	43,881.00
Idaho.....	7,772.10	9,198.00	Oregon.....	11,115.90	11,575.50
Illinois.....	65,705.49	61,285.50	Pennsylvania.....	92,234.37	91,807.50
Indiana.....	47,327.55	42,691.50	Rhode Island.....	545.79	448.50
Iowa.....	46,952.94	45,099.00	South Carolina.....	39,227.88	40,911.00
Kansas.....	36,348.65	33,952.50	South Dakota.....	15,417.21	15,747.00
Kentucky.....	52,720.44	52,581.00	Tennessee.....	53,002.53	50,904.00
Louisiana.....	35,255.28	34,509.00	Texas.....	89,924.16	92,857.50
Maine.....	10,970.70	10,039.50	Utah.....	6,091.83	6,897.00
Maryland.....	19,366.83	17,109.00	Vermont.....	5,684.40	5,305.50
Massachusetts.....	7,326.87	5,982.00	Virginia.....	48,179.91	48,150.00
Michigan.....	45,080.94	42,040.50	Washington.....	16,306.14	17,965.50
Minnesota.....	37,247.46	39,361.50	West Virginia.....	30,179.31	32,385.00
Mississippi.....	48,323.37	45,778.50	Wisconsin.....	40,412.46	41,010.00
Missouri.....	57,585.45	53,604.00	Wyoming.....	3,123.00	3,960.00
Montana.....	7,375.02	11,074.50			
Nebraska.....	26,789.73	26,220.00	Total.....	1,500,000.00	1,500,000.00

¹ Approximate, based upon a preliminary census statement.

The State will have to duplicate the funds provided under the Smith-Lever Act, with the exception of \$10,000 allotted to each State, and the supplementary extension funds, the full amount.

Mr. ANDERSON. Now, we will take up item No. 41.

AGRICULTURAL INSTRUCTION IN SCHOOLS.

Dr. TRUE. Under item 41 we are suggesting a change of language which eliminates the work relating to farmers' institutes and confines our work relating to the agricultural schools to the furnishing of such matter for those schools in order, as it is stated here, to make the schools—

more effective for the dissemination of the result of the work of the Department of Agriculture and the agricultural experiment stations, and of improved methods of agricultural practice, including the employment of labor in the city of Washington and elsewhere, and all other necessary expenses.

Mr. ANDERSON. This is rather broad language, I should say, to carry \$20,600. Under the proposed language, "To enable the Secretary of Agriculture to investigate and report concerning agriculture," this is a pretty broad proposition, it seems to me, to begin with.

Dr. TRUE. We thought we were limiting it by the phrase which follows.

Mr. ANDERSON. I do not think it is with the comma following it.

Dr. TRUE. "For the purpose of agricultural instruction in schools." If you strike out the comma, would that help it?

Mr. ANDERSON. I do not know whether it would or not. There seems to be three general subjects that you want to investigate and report about. Agriculture is very broad itself, and then you want to report for the purpose of agricultural instruction in schools.

Dr. TRUE. No; it is the matter of furnishing the schools with such matter in a form which will meet the needs of their uses on agricultural subjects.

Mr. ANDERSON. Well, I do not think that is what you say.

Mr. HARRISON. We ought to cut out the comma after the word "agriculture," in line 2, Mr. Chairman.

Dr. TRUE. We thought this language——

Mr. ANDERSON (interposing). I think the comma makes it confusing.

Mr. HARRISON. The comma makes it confusing and ought to come out.

Dr. TRUE. That may help it. Now, a large part of that work will be in cooperation with the Federal Board for Vocational Education, which seems to be more and more desirous that we should help them in this way. We have been doing that during this past year, and I have here the results of that work in the form of a couple of bulletins which we have gotten out. Those have been prepared with the special reference as to their use, and for use in the schools for Negroes which are receiving benefits of the Federal vocational education.

Mr. ANDERSON. Just what is there under this item, then, that is covered by the present language that you wish to change?

Mr. HARRISON. The purpose of this change, Mr. Chairman, is to get rid of language with reference to farmers' institutes which has caused so much confusion during the past few years. Practically no work is being done under this item on farmers' institutes and the language with reference to them is no longer necessary.

Mr. ANDERSON. What do you do under this item?

Dr. TRUE. We employ a few people who get in touch with the different department bureaus and also have at hand the result of the work of the agricultural experiment stations, and on the basis of that we prepare various publications for use in the schools. For example, the matter of home woodland is one subject which is of considerable importance in some of the States, and so, in connection with the Forest Service, we have prepared a brief series of lessons entitled "Forestry lessons or home woodlands."

Now, the Forest Service is responsible for the accuracy of the subject matter. We are responsible for putting it in such form that it can be of immediate use in the schools. The teaching of agriculture in the secondary and elementary schools is, as you know, a comparatively new subject, and while in some States, like Minnesota, considerable progress has been made in that direction, in a good many of the States it is a very new matter. The available textbooks and manuals are not very numerous or complete, and this subject is continually changing. The teachers do not have time or energy to dig out of the mass of reports from the department and obtain things that they need, and so we are aiding the movement for the extension of agricultural teaching in the schools by supplying schools with a certain amount of up-to-date information in a form for use in the schools.

Now, for that purpose we need only a very small force, but they must be well-trained men in agriculture and also in school work, and we have a few men of that kind and are doing what we can to help this movement for the broadening of teaching of agriculture in our public-school system.

Mr. ANDERSON. Do I understand you clearly, then, that this is a proposition to enable you to write agricultural textbooks and primers for these schools?

Dr. TRUE. They are not textbooks; they are, rather, additional matter for the use of the teachers. Now, in this——

Mr. BYRNES (interposing). Textbooks for teachers?

Dr. TRUE. Yes. This is intended especially for the teachers, but in preparing this for the Southern States we have gone on the presumption that these teachers would have the textbooks which are authorized by the States, and so we refer under each one of these lessons to those textbooks as the source of information.

Mr. BYRNES. And you are preparing that at the request of the Vocational Board—the Board for Vocational Education?

Dr. TRUE. Yes, sir.

Mr. BYRNES. And they issue it?

Dr. TRUE. They issue it.

Mr. BYRNES. What you do is furnish the information?

Dr. TRUE. Yes, sir.

Mr. BYRNES. And your employees are preparing these lessons?

Dr. TRUE. Yes, sir; preparing these lessons.

Mr. ANDERSON. Is all of this work devoted to the preparation of material for the schools of vocational education?

Dr. TRUE. No; we are dealing with—the Vocational Education Board deals especially with the secondary schools. Now, we are dealing also with the elementary schools, and there we are doing two or three kinds of work. We are working in some States in cooperation with the State departments of education and the State agricultural colleges in preparing material for the use of the teachers in the elementary schools in those States trying to fit it in those cases to the special materials of the States. We have done that, for example in Ohio, Maryland, Alabama; we are now doing it in Arkansas and we have a preliminary arrangement with North Carolina for work of that kind.

Then, we are also preparing some short series of lessons, outlined on different subjects, like poultry raising, for use in the elementary schools. Besides that we are taking the farmers' bulletins which contain material which we think can be used in the schools and preparing leaflets in which we try to show how the teachers can use the farmers' bulletins in connection with school work.

Mr. BYRNES. Well, don't you think that is the duty of the Vocational Board to take those Farmers' Bulletins—that it is their business to take those bulletins and prepare the leaflets from them?

Dr. TRUE. Well, the people in the Vocational Board, acting under the authority given them in the vocational education act for cooperation with the Department of Agriculture, desire that we shall do this work because——

Mr. BYRNES (interposing). It will save them some money?

Dr. TRUE. No; not particularly that, but because we are in close touch with both department bureaus and the experiment stations and other agencies that are producing this material which is the basis of our work.

Now, we are using only a small amount of money in that work and do not intend to develop any large division for that purpose.

Mr. BYRNES. Well, you seem to have only five people employed, outside of the four collaborators, messengers, and charwoman, all of whom are bound together in one item and are paid \$600 to \$1. And you have an item for traveling expense which amounts to \$4,000. What is the necessity for a large traveling expense on an item of that kind?

Dr. TRUE. Now, in connection with this work, we send our agents out to attend meetings and conferences of teachers, to explain to them what we are doing and how they may most effectively use our work, and also to learn from them what their needs are for work of this kind.

Mr. ANDERSON. Are there any further questions on that, Mr. Byrnes?

Mr. BYRNES. No.

Mr. ANDERSON. All right; we will proceed with the next item. I would suggest, however, that it might be well for you to revise this language some way. I think it is rather broader than necessary to carry this \$16,000 or \$20,000.

Mr. HARRISON. We can revise it, Mr. Chairman, so as to make it more clearly describe what we are doing in connection with the work. A draft of the same will be sent you within a few days.

TO ESTABLISH AND MAINTAIN AGRICULTURAL EXPERIMENT STATIONS OUTSIDE CONTINENTAL UNITED STATES.

Mr. ANDERSON. All right. We will take up the next item, item 42, on page 230—

To enable the Secretary of Agriculture to establish and maintain agricultural experiment stations in Alaska, Hawaii, Porto Rico, the island of Guam, and the Virgin Islands of the United States, including the erection of buildings, the preparation, illustration and distribution of reports and bulletins, and all other necessary expenses—

and so forth, for which you are asking \$310,000.

ALASKA STATIONS.

Dr. TRUE. We have under this item the appropriation for work in Alaska and the insular stations, and Dr. Evans, who is the man in charge of that work, is here and perhaps you would like to hear from him in regard to this matter.

Mr. ANDERSON. We will be very glad to hear Dr. Evans.

Dr. EVANS. I do not know whether, Mr. Chairman, you care anything about hearing of the work of the insular stations or not. You have heard that story a number of times.

Mr. ANDERSON. Yes; what we would like to know is why you want more money, and if you can get along with less?

Dr. EVANS. It is usually the case that we all want more.

The increases for the insular stations are practically all for use in connection with badly needed buildings. The first item, that of Alaska, for which \$45,000 is asked, is for the erection of buildings, the hiring of labor, and for some absolutely essential increases in salary if we are going to keep the present organization, which is not now up to what it was before the beginning of the war.

The buildings at Fairbanks, where we have a station which was established in 1907, and where there is a superintendent and one assistant superintendent, who are living in a four-room log house that was built in 1907 of green cottonwood logs. That house is now in a bad state of decay, and a modern building is considered an essential feature for that station.

The same is true of the barn at Fairbanks. It was built of logs at the time of the development of the station and the station has considerably outgrown the capacity of the barn. There have been additions to the barn from time to time by putting a little shed here and a pen there, but now the main structure is threatening to fall down almost any time.

For those buildings we are asking for an appropriation to put up, or, rather, to pay for the material. We expect to do most of the erection by using the ordinary labor of the station when it is not otherwise engaged, and in that way probably reduce the expense of the erection of the building very materially.

At Rampart, where the station is located on the Yukon River across from the little village of Rampart, we want to put up a cottage so that an assistant can be secured for that station. At the present time there is only one man there, the superintendent, and the laborers who are employed to assist him in the work. Whatever additional labor is necessary during the planting and harvesting season——

Mr. ANDERSON (interposing). You have only got three men up there and two stations, and you are spending \$75,000?

Dr. EVANS. We have five stations in Alaska, altogether.

Mr. ANDERSON. You have five stations altogether?

Dr. EVANS. Yes, sir. At Rampart we have been able to develop grain which will ripen under the most unfavorable seasons in Alaska. This last season was one of the most unfavorable in the 23 years that we have been engaged in Alaskan work, and we have quite a number of varieties of wheat, barley, and oats that matured in spite of the very late spring season and the rather early fall frost.

Now, with regard to the plant breeding that is being carried on at Rampart, that seems to be an especially favorable situation for that work. The one man whom we have there has been at the Rampart station for about 12 years. He has no assistant and should he leave the station the work would be lost so far as its continuity is concerned.

Mr. ANDERSON. What sort of buildings have you at Rampart?

Dr. EVANS. At Rampart we have one small cottage of four rooms, and a log stable.

Mr. BYRNES. Where are the other stations located?

Dr. EVANS. The main headquarters station is at Sitka, where Dr. Georgeson has his headquarters and where we have an assistant to look after the horticultural work, experience in Alaska having shown that Sitka is more favorably adapted to horticultural work, fruit work and gardening, than to other crops.

Then, we have a station at Kodiak, where we are carrying on experimental work with regard to the Galloway cattle, and the fifth station is at Matanuska, on the line of the new railroad being constructed from Seward to Fairbanks.

Mr. ANDERSON. What is the necessity for scattering these stations all over the Territory?

Dr. EVANS. Alaska embraces nearly 600,000 square miles, and has a wide range of soils and climates. The nearest two stations are over 250 miles apart.

Mr. ANDERSON. I understand that, but you have got an agricultural population of five or six thousand people.

Dr. EVANS. The development of the Territory shows it is following along the line in the regions where these stations have been located. During the war, as an emergency measure, we undertook to interest the people in the Tanana Valley, contiguous to Fairbanks, in the growing of grain. Seed was distributed to them with the understanding that they were to return to us an equal amount of seed from the crop which they produced. We did that in order to stimulate the production and the growing of grain. In 1919 there were over 5,000 bushels of grain grown in the vicinity of Fairbanks, at nearly 65 degrees north latitude. The same thing is being undertaken in the Yukon Valley and at the Matanuska station that is located along the line of the new railroad. Some six or seven hundred homesteads have been taken up within a comparatively few miles of the Matanuska station.

At all of these places—and they are all isolated—there is absolutely no place for station men to live except on the station property. It is necessary to erect the buildings to accommodate the men engaged in the service of the stations.

Mr. ANDERSON. Now, these buildings—I understand that that is the reason for the increase?

Dr. EVANS. That is very largely the reason.

Mr. ANDERSON. Has anything been done in the way of repairing those buildings?

Dr. EVANS. There has been comparatively little done with those buildings for the last four years on account of the lack of funds.

Mr. ANDERSON. I notice that you have spent \$15,000 for equipment and material. What was that spent for?

Dr. EVANS. Some of that was for emergency repair work in connection with buildings, but mostly for buildings at the Matanuska and Kodiak stations, authorized by Congress in 1919. There was a storm recently at Kodiak which did damage which will probably cost \$5,000 to repair. That damage was of such a nature that it had to be immediately repaired.

Mr. ANDERSON. Having done that—having done some work—then if you use the same amount this year, \$50,000 for equipment and material, would it enable you to do some work you have in mind?

Dr. EVANS. The estimate is for a very modest cottage, for which we are asking for Fairbanks, and the report estimates \$10,000 for that one building.

Mr. ANDERSON. For what building?

Dr. EVANS. For a cottage at Fairbanks station.

Mr. ANDERSON. What kind of a cottage?

Dr. EVANS. A 5-room frame cottage.

Mr. ANDERSON. That would cost \$10,000?

Dr. EVANS. It would cost \$10,000; yes, sir.

Mr. ANDERSON. I have no doubt that is true where you got the estimates some months ago.

Dr. EVANS. The prices are higher now in Alaska than they were a year ago.

Mr. ANDERSON. The prices are higher than they were?

Dr. EVANS. Yes, sir.

Mr. ANDERSON. When did you last hear from Alaska as to prices there?

Dr. EVANS. I talked to Dr. Georgeson last week.

Mr. ANDERSON. When did Dr. Georgeson leave Alaska, do you know?

Dr. EVANS. He left late in November.

Mr. ANDERSON. Well, he said there had been no decrease at all in labor and lumber.

Dr. EVANS. I do not think there has been; no, sir.

Mr. ANDERSON. You have to ship in the lumber?

Dr. EVANS. No, sir; not all the lumber. The finishing lumber will have to be shipped in, but the rough lumber can be gotten at the saw-mill at Fairbanks or at the sawmills in the vicinity of Matanuska.

Mr. ANDERSON. Well, I confess that it is rather difficult for me to see the reason for five stations in Alaska with the agricultural population you have got up there or are likely to have in the near future.

Dr. EVANS. There have been about 700 homesteads taken up in the vicinity of Matanuska Station since the location of the station at that point.

Mr. ANDERSON. Well, do any of them do farming on those homesteads?

Dr. EVANS. Yes, sir. They produced, as I stated a little while ago, at Fairbanks in 1919 over 5,000 bushels of grain.

Mr. ANDERSON. Well, that is a couple of hundred acres at most.

Dr. EVANS. They are growing all of their root crops, their potatoes, turnips, etc. They now produce this grain, and they are producing practically all of the root crops they need, while before they had to ship these in from Seattle and the other coast points.

Mr. ANDERSON. What is the necessity of making some of this money immediately available?

Dr. EVANS. That is in order to allow us to make use of the earliest part of the spring season for some of the preliminary work and also to get the material which it is necessary to purchase, and have them shipped to Rampart and to Fairbanks early in the season and have them on hand so that work can be done later.

HAWAII STATION.

Mr. ANDERSON. Well, what are you doing at Hawaii?

Dr. EVANS. For Hawaii we are asking an increase of \$40,000.

To go back for a moment, if you will permit me. We are asking for \$5,000 for the employment of an extension agent in Alaska. As you know, the extension legislation does not apply except to the mainland States, and Alaska, Hawaii, Porto Rico, Guam, etc., do not receive any benefit from the Smith-Lever Act.

In 1918, we, as an emergency matter, took up a little extension work at Fairbanks and at the Rampart station, and we got the people interested in producing a little bit more than they had been. That continued in 1919, when, as I say, they produced 5,000 bushels of grain and last year over 3,000 bushels of wheat. We want to carry that work on in the Tanana Valley and extend it to other parts of Alaska, put men at work and have them go into various regions and

interest and instruct the people who know very little about agriculture. Most of the settlers went to Alaska as miners or fishermen or something of that kind and they are very anxious to have this instruction in agriculture.

I had a telegram just a few days ago from Fairbanks, from what is known as the Tanana Agricultural Club asking that we do everything we can to get a permanent extension agent for the Tanana, Matanuska, and Yukon Valleys.

In Hawaii we wish to carry out the extension work, particularly in trying to organize some boys' and girls' clubs. The population is a polyglot one, and the hardest proposition we have is to get the people to understand what we are undertaking; but through the boys' and girls' club we believe we have a means of attack that will help develop agriculture. We wish to organize that work and also to do some home economics work. Little has been done in Hawaii to develop this line of work.

We have been for some several years working with the farmers themselves, but there seems to be lacking the connecting link between the actual farm operations and these other kinds of activities which we want to undertake.

In addition in Hawaii our station is located in the suburbs of Honolulu. The board of health of Honolulu has ordered that the station be connected with the sewer system of the city, as the station at present has no sewer connection. We have had to depend on artificial or old box privies and things of that character, and the board of health has ordered that station to be connected with the regular sewer system of the city of Honolulu, and it has been estimated that the cost for doing that work will be about \$3,500.

Mr. ANDERSON. You have only one station in Hawaii?

Dr. EVANS. Only one station in Hawaii; yes, sir.

Mr. ANDERSON. How many people have you there?

Dr. EVANS. At the station?

Mr. ANDERSON. Yes.

Dr. EVANS. We at present have an agronomist in charge, two extension men, one on the island of Hawaii and one on the island of Maui, and an assistant chemist and agronomist—

Mr. ANDERSON (interposing). What does the chemist do?

Dr. EVANS. He studies soils, fertilizers, and things of that sort in connection with the station work.

Mr. ANDERSON. Now, you have two men there, and you want two more; is that the idea?

Dr. EVANS. We want some one to organize the boys' and girls' club work and some one to organize the women's work. Each of these islands is separated, and the travel expense between them is considerable, and the man at Hawaii is constantly on the go from one place to another, as practically all of his time is employed, as well as the one who is on the island of Maui.

GUAM STATION.

Mr. ANDERSON. You are asking for an increase at Guam station from \$15,000 to \$40,000.

Dr. EVANS. The last appropriation bill reduced the appropriation for the Guam station by \$5,000, and that has resulted in practically

abandoning all of the field work and selling a considerable portion of the breeding stock, as it was absolutely impossible to keep the station going with \$15,000.

On account of the isolation of the station there are needed some houses, which we propose should be built of reinforced concrete, as it is believed that is better than any other structure, not only in withstanding the occasional hurricanes but that it will probably be better adapted to the climatic conditions.

Mr. ANDERSON. Are there any agricultural activities in Guam now?

Dr. EVANS. Guam is turning toward its former agricultural position. It was originally an agricultural population, but after the United States took it over the ranches were very largely deserted by the people, who wanted to work on the roads. The Navy Department began a very ambitious campaign of road building, and practically every ranch on the island was deserted, and the former owners and cultivators were all working on the roads. And this condition of affairs became so critical that following the typhoon in 1905 it was necessary to ship all foods there for quite a length of time.

Mr. ANDERSON. What were these roads like?

Dr. EVANS. They were supposed to be for strategic purposes, connecting the various points of defense, and so on.

Mr. ANDERSON. What is the population?

Dr. EVANS. Between 16,000 and 20,000. I do not know what the last census will give, but it is something like 16,000 or 17,000, I think.

Mr. ANDERSON. What proportion of the community might be classed as agricultural?

Dr. EVANS. It used to be all engaged in agricultural pursuits.

Mr. ANDERSON. Was the soil productive?

Dr. EVANS. Part of it is productive. We have introduced a great many new plants and are improving the live stock. The station has introduced many different breeds of stock, and it has vastly improved on what the conditions were when we began.

We have been doing some excellent extension work and the boys' and girls' club work is interesting the younger generation in the possibilities of agriculture and stock breeding, and out of a school enrollment of about 2,000 on the island, about 600 are enrolled in the boys' and girls' clubs. They are taking great interest in that work. Out of 545 in the enrollment of last year, 439 completed their entire year's work and wrote their formal reports. In addition to that, they furnished a story of their work. The younger generation is getting very much interested in this work, and it is something that ought to be developed.

Mr. ANDERSON. How many stations have you at Guam?

Dr. EVANS. We have one.

Mr. ANDERSON. You only have one? What buildings have you got there now?

Dr. EVANS. We have one building where the animal husbandry man himself lives. We have a small office building and a stable with open shed for implement shelter. We want to erect a residence for the assistant and a barn of concrete that will be rat and vermin proof.

VIRGIN ISLANDS STATION.

Mr. ANDERSON. All right. You have got a \$10,000 increase for the Virgin Islands station.

Dr. EVANS. That is for another building proposition. The station is located on an old sugar plantation two and one-half miles from the nearest town. There is absolutely no place where anyone can live or any possibility of renting a place anywhere else. The agronomist in charge occupies the old plantation house.

The only other man at the station is a married man and he is quartered in what was formerly the labor overseer's house. It is a few rooms at one end of a cattle corral, I think about 20 feet from a manure pit. That man is a graduate of one of our institutions here in the United States and his wife is a graduate of Chicago University, and when I was there last spring they were very much put out to think that they were living in such a place, but it was impossible to rent anything on the island anywhere near where the station is located.

Mr. BYRNES. What is the character of the specialist there?

Dr. EVANS. We have no specialist there.

Mr. BYRNES. This table on page 233 shows that you have a specialist there at \$4,000.

Dr. EVANS. The same item occurs in the estimates for the Alaska, Hawaii, Porto Rico, and Virgin Islands stations. As printed the item is not quite correct. It was intended as a part-time employee for 1921. As Dr. True mentioned earlier in the day it was necessary in order to carry on some of the activities in the office of experiment stations to transfer some of the funds. In the adjustment of funds it was decided that the stations should contribute toward their administration by paying part of the salary of the chief of insular stations. As a consequence Alaska, Hawaii, and Porto Rico each contribute \$999.99; Virgin Islands \$333.33, and the office of experiment stations \$666.66 for the current year. The item is not submitted for 1922. There is no specialist at \$4,000 connected with any station.

Mr. BYRNES. There is no such a man there?

Dr. EVANS. There is no such a man there. That item was included in the estimates only to show how the funds had been transferred for the current year in order to carry the activities of the office of experiment stations.

CHEMISTS.

Mr. RUBEY. You seem to be pretty long on chemists; in Hawaii particularly.

Dr. EVANS. We have but one chemist in Hawaii at present, and that one is an assistant chemist. We have had a turnover of over 100 per cent in the station personnel in the Hawaiian station during the last year.

Mr. RUBEY. You have four down here.

Dr. EVANS. That is the way that the estimates were made up. Some of them were employed during the year 1920. Some of them were employed during the year 1921, and some of them are estimated for the year 1922.

Mr. RUBEY. You do not have any in Alaska?

Dr. EVANS. We have none in Alaska.

Mr. RUBEY. Is it too cold for them up there?

Dr. EVANS. No; it is not too cold; not at all. If we had the funds, a chemist would be very, very useful.

RECEIPTS FROM STATIONS.

Mr. RUBEY. What do you receive from those stations.

Dr. EVANS. The receipts from the stations sales up until 1916 were largely used in building operations and in permanent improvement. In 1916 Congress took away from us the privilege of using these funds which are now deposited in the Treasury to the credit of miscellaneous receipts. The total receipts from the sales of the stations to September 30, 1920, has been \$81,409.21. Since 1916 the receipts have been \$23,972.54, leaving approximately \$56,000 that have been put into the permanent improvement of the station, or invested in live stock, buying equipment, or something of that kind, but since 1916 we could not use those funds, but have deposited them in the Treasury.

Mr. RUBEY. During this last year you deposited \$81,000?

Dr. EVANS. No; that is the total.

Mr. RUBEY. That is the total?

Dr. EVANS. That is the total deposited since we began selling products.

Mr. RUBEY. Since you began in 1916?

Dr. EVANS. Since we began to have the use of the funds, since 1903—

Mr. RUBEY (interposing). Since you began depositing the funds?

Dr. EVANS. Since we began depositing the funds which are no longer available, there have been deposited \$23,972.54.

Mr. ANDERSON. Since 1916?

Dr. EVANS. The deposits have been \$23,917.54 since 1916. Congress never made any appropriation for buildings in connection with the insular stations, and the buildings have been erected out of the little money squeezed out of the appropriations or from these sales. With two exceptions all the mainland experiment stations have the use of the moneys received from the sale of produce for their maintenance expenses. We had that privilege until 1916. From that time we have been compelled to deposit the money in the Treasury; but the amount that we are asking for in this increase is just a little bit more than what has been turned in as sales.

In connection with the question about the chemist in Hawaii, there is but one—an assistant chemist—there. We had a chemist at \$2,400, who left to take a position of \$4,800 in Honolulu. Another man was appointed in his place at \$2,220, and in three months he resigned to take a place at \$4,000. We then transferred a man from the department, who is carried now as an assistant chemist, and he has been there less than a year, but he may leave at any time. We had a horticulturist, who resigned to go to the Philippine Islands at \$4,000 a year. We were paying him \$2,400. The place was vacant for six months. I could not get anyone to take it. Finally, when we did find a man with the technical training and the practical experience, we had to pay him \$3,000 to take it. We had a plant

pathologist at \$2,100. After about a year he went with the Sugar Planters' Experiment Station at \$3,500.

Mr. RUBEY. You are running a pretty good training school.

Dr. EVANS. Yes, sir; we are running a training school because we can not pay large enough salaries to keep men at the stations. The same thing is true at Porto Rico. We had a very capable man engaged in the agronomy work, but he left last August to go to a sugar plantation in Cuba at more than double the salary we were paying him.

Mr. ANDERSON. You are doing some good, anyway.

Dr. EVANS. There is considerable difficulty in keeping the stations running with such rapid departures.

Mr. ANDERSON. All right, if there is nothing further, we will take up the next item.

Dr. TRUE. Dr. Langworthy can explain that item to you.

TO INVESTIGATE THE RELATIVE UTILITY AND ECONOMY OF AGRICULTURAL PRODUCTS FOR FOOD, CLOTHING, ETC.

Mr. ANDERSON. The next is item No. 43—

To enable the Secretary of Agriculture to investigate the relative utility and economy of agricultural products for food, clothing, and other uses in the home, with special suggestions of plans and methods for the more effective utilization of such products for these purposes with the cooperation of other bureaus of the department, and to disseminate useful information on this subject, including the employment of labor in the city of Washington and elsewhere, supplies, and all other necessary expenses—

for which you are asking \$80,000.

Dr. LANGWORTHY. Do you want me to tell you why we want the increase, Mr. Anderson?

Mr. ANDERSON. I would like to have you tell us where you can cut this item down somewhere.

Dr. LANGWORTHY. I do not feel that we can cut it down at all, because the funds which we have at present are not sufficient to enable us to meet the demands which are made for information urgently needed by county agents in home economics and for other purposes. Then, too, it is a fact that the sum allotted to home economics work has diminished somewhat each year for several years, because clerical help such as we needed could not be obtained for \$1,000 and \$1,100 per year—the only kind of vacancies on the States Relations Service clerical register. Filling such positions from a lump sum means that the position becomes a permanent one on the statutory roll and the lump sum for research work is permanently lessened by that amount. For this reason research funds, instead of being increased, are now actually smaller than they were.

Mr. ANDERSON. Why don't you borrow one from some of the other bureaus that have got more than they need?

Dr. LANGWORTHY. The States Relations Service has done all that it could to help us, but has not been able to provide needed help in that way. For instance, an executive clerk was greatly needed this year and the position could be filled for \$1,440. Such a position is automatically transferred to the statutory roll and that means so much less money for research work for another year. We have managed our work as economically as we could and have tried in every way

to secure the maximum result which was possible, but I am convinced that the sum now available is so small that the office of home economics is not properly proportioned to the other offices with which it is related and the activities which it always keeps in mind in making its plans.

Perhaps I should not make comparisons, but the Office of Home Economics, which is the only agency specifically authorized to study the use of food, clothing, household equipment, and household labor, is not organized on a comparable scale with the enterprises with which it is coordinated and for whom it gathers information. The total appropriation made for this work is less than two-tenths of 1 per cent of the department's total appropriation, which is certainly not a large amount to devote to the study of the home problems of the woman, when it is remembered that the woman in the home spends 80 to 95 per cent of the family income—the greater part of it for food and other products which are directly or indirectly of agricultural origin—

Mr. BYRNES (interposing). The women are interested in everything else that pertains to agriculture or to any other business, just as much as the men are.

Dr. LANGWORTHY. Yes.

Mr. BYRNES. I think they are just as much interested as the men are.

Dr. LANGWORTHY. Yes; they are certainly interested in the department's work as a whole, and, in addition, they also have a special interest, for, as an economical factor, woman has the direct supervision of the expenditure of the greater part of the family income. Therefore, the intelligent expenditure of this money by her for such necessities of life is a matter of great economic importance, and her interest in and relation to "consumption" of agricultural products is of the greatest importance.

Mr. BYRNES. I know; but the American woman, the majority of the American women, are just as vitally interested in the ideas which you have been discussing as anybody else can be.

Dr. LANGWORTHY. Yes; they are and should be interested in agriculture in general, and since the bulk of agricultural products are used in the home, they have a special interest in this matter, for they do the bulk of the purchasing and determine how they are to be used. Home economics means the study of such questions as these.

The Office of Home Economics is authorized to do research work relating to the use of agricultural food products in the home and related questions, in order that county agents and other extension workers may be provided with subject matter which they can pass on to the home maker. For this we have an appropriation of \$44,300 and a staff of 20 engaged in research work. This is not sufficient to keep up with legitimate demands of the extension work in home economics, for which \$3,000,000 is appropriated, and in which 2,000 home-economics demonstration agents are now engaged.

Mr. BYRNES. You furnish the home information?

Dr. LANGWORTHY. Our work is organized to do this just as fully as we can and meet requests for information and keep up with the situation to the best of our ability. We study basal questions about food—what constitutes its nutritive value; how to prepare it economically and well; how to combine it into wholesome, rational meals, which can be eaten with relish; and how to organize these and other

questions of household work so that the best use can be made of money and time and strength. There is much still to do and each year brings new problems. Work already done has been of prime importance to the development of the whole food subject. For instance, Bulletin 28 of the Department of Agriculture, called "The Chemical Composition of American Food Materials," which was a product of the earlier years of the work, not only has been for years a standard reference work on food composition for teachers, extension workers, and others, but was generally so recognized when the war brought new needs for such information. It was adopted in Great Britain and used as a basis for discussion of national food and rationing problems. It was much used in similar ways in other countries and was finally chosen by the Inter-Allied Commission of Nutrition as the standard reference work on food composition.

We are trying to get such basal facts and also to keep up with demands for information brought about by changing conditions. There are always special problems coming up, on which information is requested. For instance, we are frequently asked to make suggestions which will enable a farm woman to provide meals for the extra number of men required during harvest time, without more work than the farm woman can be expected to do with the help which she can get. This feeding of large numbers at special seasons is a serious problem on a great many farms. A great deal has been written about it and some work has been carried on; for instance, by the home-economics department of the university. But not enough is known to enable us to offer suggestions of general application. It is an important problem which I am sure we could study with great profit. I can go into these matters further, if you wish, and can prepare detailed statements, if you care to have them.

Mr. ANDERSON. Well, suppose, Doctor, you tell us what you want the increase for, and perhaps this will incidentally develop as we go on.

Dr. LANGWORTHY. An increase of \$35,700 is needed. Of this, \$28,200 is to be used for work in food, textiles, and household equipment, and \$7,500 for work with the respiration calorimeter.

TO ENLARGE WORK ON FOOD AND DIETETICS.

Of the \$28,200, \$17,200 would be used to enlarge the work on food and dietetics, to study the intelligent selection of the family's diet, improved practices in food preparation, and other such matters pertaining to the right use of food products in the home.

FOR STUDY OF PROBLEMS OF HOUSEHOLD LABOR AND EQUIPMENT.

For study of problems of household labor and equipment and improved methods of household management, \$5,000 is asked. This work would include systematic studies of existing practices in farm homes and economical and efficient types of labor-saving devices, and the comparative value of other household equipment. For example, it would include such topics as fuel consumption in ranges and other heating devices and the possibilities of economy in their use; and ways of lessening household work by a better knowledge of cleaning materials, devices, and methods. The possibility of improvement in

the use of fuels is shown by the success we have had in the study of artificial and natural gas problems in cookery, a line of work carried on in cooperation with the Bureau of Mines.

FOR STUDY OF ECONOMY IN USE AND CARE OF FABRICS FOR CLOTHING, ETC.

For the study of problems of economy in the use and care of fabrics for clothing and other purposes in the home, an increase of \$6,000 is needed. The work with clothing does not mean a study of styles, of fashions, or anything of that kind, as is sometimes thought. It means studying the influence of work of different sorts, of sunlight and the moisture in the atmosphere, of methods of washing and cleaning, and of wear and tear in general upon the "life" of textiles as used for clothing and other household purposes.

Knowledge of this sort will enable the housekeeper not only to select her materials wisely but to use them and care for them in a way which will prolong their usefulness and make for economy; and, by the way, such work as this is welcomed by manufacturers. Indeed, it was such work which furnished the kind of information which the War Department found absolutely essential in its selection of textiles for Army uniforms, blankets, truck covers, tents, and aeroplane wings, and for other purposes. Some special studies were commenced at the Bureau of Standards and the results obtained were, I understand, of the greatest value at the time and are also of permanent use. Such work, from the standpoint of the housekeeper's problems, is just as urgently needed, and we know how to carry on such work if we are given the opportunity.

Mr. ANDERSON. What is a practical application of that? That is what I am trying to arrive at.

Dr. LANGWORTHY. As an illustration, a practical application of such research as I have in mind would enable one to say that sheeting of such and such weight per yard, with so many threads to the square inch, would in use give longer service than another sheeting of different weight per yard and with a different number of threads to the square inch. With such facts the housekeeper could buy with more complete understanding than is now possible.

Mr. ANDERSON. How are you going to ascertain whether or not a piece of sheeting has a certain number of threads to the square inch?

Dr. LANGWORTHY. We can count them, and we can provide a large amount of accurate information which will enable the housekeeper to choose and use materials wisely. We have taught her, for instance, a good many things along this line in bulletins already published and in special articles prepared for extension workers.

Mr. BYRNES. I think if you could get them to buy cloth by that method it would be a very good thing.

Dr. LANGWORTHY. The women do appreciate the value of such facts and want to be given such information as this. Such requests come to us very frequently. For instance, a few days ago a woman sent in a sample of silk and wanted to know whether or not it was pure silk. We are not authorized to make analyses and supply such information, but I made a simple test—one which she could have made herself—and it showed that the sample was a pure silk. When burned, pure silk melts up into a sort of gum, and with continued application of the flame it burns up almost entirely, leaving nothing

more than a little bit of ash. In the case of a good many silks, a sample will not burn up like this but will leave behind an ash which may retain very much the form of the original silk. This means that the silk has been very heavily weighted, either with tin salts or iron salts, and these, like other mineral matters, will remain behind when the sample of cloth is burned. A proper amount of weighting is a recognized treatment of silk, but, on the other hand, too much weighting lowers its quality very greatly. The amount of ash left when the sample is burned gives a clear idea of the amount of weighting which the silk carries. The test is a simple one and anyone can apply it.

Mr. ANDERSON. I understand that a good deal of silk is made of cotton.

Mr. LANGWORTHY. Yes: of cotton which is chemically dissolved and then spun into fibers called "artificial silk." Cotton is also mercerized to look like silk. With other cloths and fabrics it is not quite so easy to determine relative quality as it is with overweighted silks, but we can give fairly simple methods, and they are really wanted. We cannot anything like keep up with the present requests for information of this sort, because we have not enough laboratory workers.

I might say that such material as we wish to accumulate and organize for the use of extension workers can only be procured in a laboratory, and only a limited amount of such information exists at present. A little of the work that has been done at the Bureau of Standards for other purposes can be adapted to household needs. We want to cooperate with them in so far as this is desirable and have found them very ready and willing to cooperate with us and in every possible way help on the study of such problems.

With changing conditions and readjustments of wages and prices at the present time, and with what this means for the immediate future, I suspect that we will have to carry on work comparable to some of that done in war times if we are going to live anything like as well as we have on the incomes we will have. So we want to arrange our work with food, clothing, and household equipment in such a way that we can meet the demands which will be made for information. That such a condition is generally recognized is shown by the fact that at the international congress of home economics, which is to be held at Strassburg, Alsace, the coming summer, the chief problem for discussion is how to simplify necessary household practices and make the best use of existing resources, for it is realized that because of after-war conditions in Europe families must learn to live more simply in order to live at all. The same problems are facing us, though a different degree.

Mr. ANDERSON. I want to go back to this fabric business: Are you trying to evolve some simple methods by which men and women can estimate the wearing qualities of the various fabrics?

Dr. LANGWORTHY. Yes, sir. We want to do just that very thing. Most men have learned a few things which will help them when they buy clothes, and so have women. Most of us know how to tell woolen from cotton and cotton from silk, but very few of us can tell whether or not some cotton has been substituted for wool, and if so how much. We know that there are differences in weave and that these not only affect the looks but the wearing quality.

We know, for instance, that homespun weaves, like those made in some localities in the South, are not only of good appearance but will wear well and at the same time retain their good looks and can be cleaned without loss of their desirable qualities. On the other hand, loosely woven cloth is likely to lose shape when made up and the individual threads may catch and pull out, or a cloth with a long-napped surface may readily mat down and look shabby in a short time. If a person understands these differences, he is less likely to be disappointed in what he buys. It often comes to a question of whether it is best in the long run to buy durable but expensive clothes or to buy two suits and wear each for a shorter time, which while not made of so good cloth and containing, perhaps, a good deal of cotton, yet are of very good appearance for the time they are worn.

Mr. ANDERSON. And is that not largely a matter of taste and individual opinion?

Dr. LANGWORTHY. Yes; but the individual's opinion and choice are very commonly influenced by his knowledge and beliefs about such matters, and would often be influenced in greater degree by such knowledge if he had it.

Mr. ANDERSON. All right.

Dr. LANGWORTHY. We do not want to influence anyone to wear something that he does not like.

Mr. ANDERSON. My impression is that during the last few years, at least, people have not paid very much attention to quality and that most people who buy clothes and who have the money to buy them with have not bought them with much regard to whether they will wear well or whether they are of good quality or not.

Mr. BYRNES. I think that is true. I am only wondering whether it could be of a practical benefit to the average person whether or not many people will follow your suggestions as made.

Dr. LANGWORTHY. I think they do, judging by the replies they often make to our letters and by the demands that have been made for the publication based on our work on removing spots and stains, an important part of the care of clothing.

One of the subjects which we consider is better methods for caring for clothing and keeping them clean and in good condition, so that we may prolong their period of usefulness.

The demand for the bulletin dealing with the removal of spots and stains has been very heavy, and anything dealing with such subjects as clothing and its care has been extremely popular.

Mr. SMITH. This is a very popular subject with the home-demonstration work with the farm women. They are anxious to get that information as to the care of their clothes.

Mr. ANDERSON. I suppose they are especially so since they have all got automobiles.

FOR STUDY OF PROBLEMS OF HOUSEHOLD LABOR AND EQUIPMENT.

What is this \$5,000 which you say here is to study the problems of household labor and equipment and improved methods of household management?

Dr. LANGWORTHY. That is for the study of the relative efficiency of kitchen equipment and also of household labor and ways of lessening it. We have been working for some time in cooperation with

the Bureau of Mines to determine the factors which make an efficient gas stove, particularly one for use in natural-gas regions, and have found that stoves in use are not efficient, but can readily be made so without much trouble. Every one concerned seems willing to make the necessary changes, and so help materially to conserve the limited supply of natural gas. We get letters almost every week asking what kind of kerosene stove or gasoline stove or gas stove is most efficient for household work, and want to make studies which will enable us to answer such questions.

The work would, of course, also cover such things as the selection of vacuum cleaners and other appliances used in the home. We do not purpose to discuss such things on the basis of different makes, but would like to be able to discuss them on the basis of differences in principles of construction. Such work as we want to do is in line with that which progressive manufacturers welcome.

Mr. ANDERSON. If you can not tell them which is the most efficient in some way or other, how are you going to help anybody?

Dr. LANGWORTHY. We can tell a great deal about them by describing principles without mentioning any trade names. In the matter of washing machines, for example, we know that all of those for home use come under four or five types. If we can explain the principles on which each type works and its advantages and disadvantages for use under various conditions, we can help a woman to choose the kind best adapted to her needs without mentioning individual makes at all. We can also show her how to use and care for any machine so that it will give the best service. We get a great number of letters asking questions about the very things about which I am speaking. They come from housekeepers, from men and women interested in all sorts of problems, and from various trade concerns.

Mr. ANDERSON. They really ask you for this information?

Dr. LANGWORTHY. Yes; they do ask for it. They ask about almost everything one can think of which has to do with household materials and management. We do all we can, but we can not with our present knowledge provide answers to perfectly reasonable questions, because as yet no one knows how to answer them. For example, we get many requests for information as to what is a reasonable amount of time for a woman to spend on different household tasks, and how she can cut down the time spent in household work without neglecting anything necessary. It seems to be generally agreed that many housekeepers, especially farm housekeepers, have to work too many hours. But we can not tell them how to lessen the time until we study how the time is now used.

To speak in factory terms, we want to analyze the housekeeper's job as a necessary stem toward shortening her working-day without lessening her output. We have made a very few such studies in farm homes, and it looks as if in those few typical homes the woman's working-day averaged 12 or 13 hours. The information that we would get from these studies of household labor and equipment would be used in popular bulletins and in publicity work of the department, as well as by extension workers and other leaders.

TO ENLARGE WORK WITH THE RESPIRATION CALORIMETER.

Mr. ANDERSON. You are asking for \$7,500 to enlarge the work in the respiration calorimeter.

Dr. LANGWORTHY. We want to use this increased appropriation chiefly in connection with studies of cold-storage problems, which lines of work we have begun to develop and which are full of promise and of great economic importance. I mean the study of methods which are germane to the successful cold storage of agricultural products, either in transit or after they have reached the cold-storage chamber. It has been found that the respiration calorimeter is especially adapted for the study of such problems because it measures very accurately heat and gases given off by materials under a variety of conditions, including those which prevail in the storage industry. The first work of this sort we did was in cooperation with the Bureau of Plant Industry. The Bureau of Markets recognized the value of such work, and during the war asked us to undertake some special work of this sort. The results have been very encouraging, and I feel confident that we can obtain the data which will be of very great importance in considering the problems of this very large industry. For example, Mr. Chairman, it has long been known that many products in storage "heat," and it is known that this is due to the fact that vital changes go on after the fruit or vegetable is harvested. It is for such reasons that apples mellow and vegetables ripen. Successful cold storage depends upon the ability to retard and control such changes and in such a way that they may be resumed if necessary when the product is put on the market.

I understand that cold-storage costs are now based, to a considerable extent, at least, on some rather loose estimates made when the industry began to assume importance, and that really exact information is greatly desired. Now, with the respiration calorimeter we can measure accurately the factors which enter into this problem, such as the heat content of different fruits and vegetables and other products when they go into storage and the heat which they generate while in storage at different temperatures. From such accurate measurements we can determine the exact amounts of "cold" required for different kinds of storage. By means of the respiration calorimeter experiments we can also learn a great deal about the best conditions for keeping products and those which reduce very greatly the chances of spoilage. Some of our work has been with apples. The problem is to cool them and keep them at such a temperature that decay in cold storage is avoided—that is, to retard the natural "after-harvest" changes and yet not injure the fruit so as to prevent ripening when taken out of storage. The whole problem is to apply these methods to different kinds of products until we have learned the best way of treating each. The food investigation board of the British Government has just outlined a series of studies of such storage problems which it plans to carry on during a long period of years, and it seems to me that this is an indication of the value which is attached to research work of this character, which I believe should be developed by the Department of Agriculture. We have devised methods and have the necessary apparatus, but as yet have not had a chance to use it to its fullest extent for this kind of work.

The Bureau of Markets has urged this work and is willing and ready to cooperate with us. That people are thinking about it is indicated by the fact that one of Dr. Evans's associates from the Porto Rico Experiment Station who was recently in Washington asked us to test a problem of grapefruit ripening which was important in

relation to successful transportation of this fruit. He had attempted to study this problem but found that he could not do so without special equipment such as a respiration calorimeter. We carried on some experimental work with him and were able to get the kind of data which he was seeking, and I am sure that he feels that problems related to grapefruit shipping and grapefruit storage can be solved by the continuation of this kind of work. I am convinced that no line of work is more promising than this new application to agricultural problems of a scientific method of great exactness and many possibilities.

Mr. BYRNES. That is very interesting, anyway.

Dr. LANGWORTHY. It is the practical application of very exact scientific methods. We have demonstrated the kind of work that can be done, but have not been able to pursue the study far enough.

Mr. ANDERSON. Let me ask you what you are trying to find out as a practical idea in carrying on those experiments—what is your objective? Are you trying to discover the temperature at which you can keep vegetables or simply trying to discover the changes that go on, or what are you trying to do?

Dr. LANGWORTHY. In the first place, we are trying to find out how much heat the fruits or vegetables contain when they go into storage—that is specific heat—and the changes which take place when the fruit or vegetable is held at a given temperature. We want to know how much heat is developed by ripening changes and the changes which take place in the stored product and how much is developed at a lower temperature, a medium temperature, and a higher temperature. In interpreting the observations we also take into account the character of the product at the beginning of the experiment, which is important in discussing cold-storage procedure and in estimating cold-storage costs.

Mr. ANDERSON. Are not the very same studies carried on in a different way by the Bureau of Markets and the Bureau of Plant Industry?

Dr. LANGWORTHY. No, sir. This is not the case. Their work is not like ours.

Mr. ANDERSON. Well, they not only want you to do it, but they are doing it themselves.

Dr. LANGWORTHY. The Bureau of Plant Industry has studied problems which have to do with the storage of agricultural products, but they are not of the same character as the work which the office of Home Economics has done, nor are the same methods followed. As a matter of fact, our first work of this sort was carried on in consultation with the Bureau of Plant Industry and, I think, I am justified in saying that this bureau is glad to have the respiration calorimeter used for such work, as it furnishes data which can not be obtained in any other way. As I understand the matter, the Bureau of Markets has not undertaken any experimental work with storage problems. However, it was at the request of this bureau and in cooperation with it that the experimental studies were made with apples, with celery, and with eggs, and we count on the cooperation of the Bureau of Markets in future work which we hope to carry on.

Mr. ANDERSON. Well, they can take a bushel of sweet potatoes down here somewhere and put them in storage some place and keep one bushel in at 50 and another at 60, and so on up, and in that way they can soon discover the point at which they keep the best.

Dr. LANGWORTHY. I am familiar with the work to which you refer. It deals with an interesting problem, but is not at all like the work which we carry on with the respiration calorimeter. We have often discussed our problems with experts in the Bureau of Plant Industry, and before the war made it necessary to devote all our energy to special work, we had considered with them the possibility of extended cooperative studies, which would involve the use of the respiration calorimeter, and I hope that now this cooperative enterprise will be possible.

Mr. ANDERSON. Is there anything further under this item?

Dr. LANGWORTHY. No, sir; I think I have spoken of all the lines of work which we want to do.

Mr. ANDERSON. Well, is there anything that you want to take up?

Dr. LANGWORTHY. No, sir; I do not wish to take up anything further, except I have brought some specimens of some of our products which illustrate the possibilities of saving time in home methods of preserving fruits without materially lessening their quality, and other samples which show pectin made by home methods which we have standardized and have made practical for housekeepers' use. I have also brought some samples of homemade jellies made with this pectin from fruits which do not ordinarily yield a jelly.

Mr. ANDERSON. I think that perhaps we had better finish the next item, Doctor, before we examine those.

The next item finishes the bureau.

ADMINISTRATIVE EXPENSES.

Dr. TRUE. Well, we are asking for an increase for administrative expenses. You will notice that this includes the general work that is done in our central office and that work is growing with the growth of the enterprises with which we are connected. Now, it happens that this sum has been by certain technical processes reduced so that it does not bear the expenses which we think ought to be charged to an item of this kind.

Mr. ANDERSON. If you think that we could take it off we would be very glad to do it.

Dr. TRUE. So that what we propose now is the restoration of this to the amount which the States Relation Service had for administrative expenses when it was organized in 1915 and was a comparatively small enterprise. Within the past year we have undertaken more work under this head by consolidating in this central office some of the work which was carried on in other offices, in order to have it more economically conducted, and that has added to the expenses which properly come under this item.

Mr. ANDERSON. Well, now, I can not see any difference as far as the tabulated statement shows. Under this item you have got an agricultural physicist on this roll, and another agricultural physicist,

a scientific assistant, on this roll, and another scientific assistant—at least your proposition is to have two more scientific assistants and one clerk at \$2,400. Now, this is a scientific item, and I am wondering what you are doing with this agricultural physicist and these scientific assistants.

Dr. TRUE. There is only one agricultural physicist, and it happens that he is the man who has charge of our publications and editorial work, which is done in the central office. He has been with us for a very long time, and the fact that he is an agricultural physicist and a man trained in an agricultural institution has enabled him to do much more efficient work.

Mr. RUBEX. If you would give him a name which indicated what he was doing it would be better.

Dr. TRUE. Yes. He has associated with him a man who attends to the preparation and distribution of all lantern slides, charts, and other illustrative material in connection with our extension work, schools, and agricultural meetings of various kinds. We have a considerable collection of lantern slides which we distribute through the extension service.

Mr. ANDERSON. I thought that was done through the division of publications?

Dr. TRUE. The division of publications deals with these matters in a somewhat general way for the department as a whole, and the developing and printing of the lantern slides is done in the photographic laboratory connected with the division of publications, but the making of the photographs, coloring of the slides, and the distribution of this material to the extension service and schools is done through our office. Then these other scientific assistants, two of them, are connected with the library and bibliography work that we do. We, like the other bureaus, maintain a small force of that kind, who deal with the general library and do bibliographical work for the whole service. We have a collection of experiment station publications and extension publications and record, and the women who have been trained in the methods of library work and bibliography work have always been carried in this central office because they work for the benefit of the service as a whole.

Mr. BYRNES. You are asking for one additional scientific assistant, are you not?

Dr. TRUE. No; there is no additional one over the present force—formerly there were two, one at \$1,500 and one at \$2,000—the \$1,500 employee was replaced at \$1,200.

Mr. ANDERSON. And one promotion?

Dr. TRUE. Yes; that was made July 1, 1920.

Mr. BYRNES. I think we understand about them.

Mr. ANDERSON. Is there anything further you want to present, Dr. True?

Dr. TRUE. No; I think there is nothing further, except to make this suggestion: Our Alaska agent is in the city and if you desire any further information in detail about the work in Alaska he will be very glad to appear before you.

TUESDAY, JANUARY 4, 1921.

BUREAU OF PUBLIC ROADS.

STATEMENTS OF MR. THOMAS H. MacDONALD, CHIEF OF THE BUREAU OF PUBLIC ROADS, AND MR. S. H. McCROBY, CHIEF OF DRAINAGE INVESTIGATIONS, DEPARTMENT OF AGRICULTURE.

READJUSTMENT OF AND INCREASES IN SALARIES—ELIMINATION OF LOWER-GRADE POSITIONS.

Mr. MacDONALD. Mr. Chairman and members of the committee, the major work of the Bureau of Public Roads is divided into three activities—first, the highway research, investigational, and extension work; second, the Federal-aid road work; third, the agricultural engineering work.

The estimates before you for the first part relate to the highway research, investigational, and extension work. Items 1 to 53 are the statutory places. In item No. 5 we are asking an increase of \$300 for one instrument maker, and in item No. 6 an increase of \$300 for one model maker. Both of these men have been in the service of the bureau for some time, are experienced men, and we could not replace them for the salaries we are now paying or for the salaries to which we propose to advance them.

Mr. ANDERSON. I notice you have in item No. 2 a purchasing agent by transfer from lump fund. Is that place connected with purchases in the bureau or purchases connected with Federal aid?

Mr. MacDONALD. In connection with purchases within the bureau. I have seen some statements made as to the possibility of the reorganization of the purchasing for all the Federal departments, and should that be seriously contemplated we are willing to have that particular item stricken out and would then handle supplies through some clerk appointed for that purpose.

In item No. 10 we have five clerks, at \$1,500 each. These new places and those in items 14, 16, and 27 are submitted in lieu of the places dropped in items 12, 13, 15, 17, 23, 26, 28, 29, 30, 32, and 35. Our purpose, Mr. Chairman, in making these changes is to do away with a large number of odd-salaried positions and to concentrate in a few classes our statutory roll. There would be resulting promotions, but these would be for very moderate amounts, as follows:

New places: 2 at \$1,500, 5 at \$1,400, 5 at \$1,320, and 4 at \$1,100.

Dropped: 2 at \$1,440, 2 at \$1,380, 1 at \$1,320, 4 at \$1,260, 2 at \$1,140, 2 at \$1,080, 1 at \$1,020, 7 at \$1,000 and 3 at \$900.

Promotions: 2 at \$1,440 to \$1,500, 2 at \$1,380 to \$1,400, 2 at \$1,320 to \$1,400, 1 at \$1,260 to \$1,400, 1 at \$1,260 to \$1,320, 4 at \$1,200 to \$1,320, 1 at \$1,020 to \$1,100, and 3 at \$1,000 to \$1,100.

Sixteen new places, totaling \$21,000, have been substituted for 24 places, totaling \$27,160.

We find now that we are constantly shifting a rather considerable force ahead when any of these positions are made vacant, and we do not believe that the small increases varying from \$20 to \$60 are justified, and our idea is to limit the number of classes of clerks by these recommended changes.

Mr. HARRISON. The net effect of all these changes, Mr. Chairman, is to add 16 new places, carrying a total of \$21,000, and to drop 24 places, carrying a total of \$27,160.

VACANCIES.

Mr. ANDERSON. Have you any vacancies in your statutory roll now?

Mr. MACDONALD. All our lower positions are vacant or filled only temporarily.

Mr. ANDERSON. Below what amount?

Mr. MACDONALD. Below \$1,000.

Mr. HARRISON. You are speaking really of the clerks; there are some other lower-grade places—messenger boys, laborers, and employees of that class—which are not vacant.

Mr. MACDONALD. Yes, sir.

Mr. ANDERSON. It does not seem to me that you get away very much from these odd-salary positions. You have 7 clerks here at \$1,320 in item No. 16.

Mr. MACDONALD. We would retain the \$1,320 grade, but we do away with the \$1,440, \$1,380, \$1,260, \$1,140, \$1,080, and \$1,020 grades.

Mr. ANDERSON. I wish you would have a statement made showing all of these clerks thus affected by the changes and those that are not in parallel columns as they are now and as they will be under this rearrangement.

Mr. MACDONALD. Very well. I have a statement showing the promotions resulting from the new places on the statutory roll, but I can furnish the full statement.

Mr. ANDERSON. The trouble with those statements is they only deal with the places that are changed.

Mr. MACDONALD. Yes.

Mr. ANDERSON. And unless you have the whole list in the clerk class before you it is rather difficult to tell what happens.

BUREAU OF PUBLIC ROADS, STATUTORY ROLL.

PRESENT.

1 chief of bureau-----	\$6, 000
1 draftsman or clerk-----	1, 920
1 clerk-----	1, 900
1 instrument maker-----	1, 800
1 model maker-----	1, 800
4 clerks, class 4-----	7, 200
7 clerks, class 3-----	11, 200
1 clerk or editorial clerk-----	1, 600
3 clerks, at \$1,500 each-----	4, 500
1 clerk or photographer-----	1, 440
1 clerk or instrument maker-----	1, 440
1 clerk or tabulator-----	1, 440
1 clerk, class 2-----	1, 400
2 clerks, at \$1,380-----	2, 760
2 clerks, at \$1,320-----	2, 640
4 clerks, at \$1,260-----	5, 040
7 clerks, class 1-----	8, 400
1 clerk or editorial clerk-----	1, 200
1 draftsman-----	1, 320
1 clerk or draftsman-----	900

PROPOSED.

1 chief of bureau-----	\$7, 500
1 purchasing agent-----	2, 500
1 draftsman or clerk-----	1, 920
1 clerk-----	1, 900
1 instrument maker-----	2, 100
1 model maker-----	2, 100
4 clerks, class 4-----	7, 200
7 clerks, class 3-----	11, 200
1 clerk or editorial clerk-----	1, 600
5 clerks, at \$1,500 each-----	7, 500
1 clerk or photographer-----	1, 440
6 clerks, class 2-----	8, 400
7 clerks, at \$1,320-----	9, 240
7 clerks, class 1-----	8, 400
1 clerk or editorial clerk-----	1, 200
1 clerk or draftsman-----	1, 320
1 clerk or draftsman-----	1, 200

BUREAU OF PUBLIC ROADS, STATUTORY ROLL—Continued.

PROPOSED—continued.		PRESENT—continued.	
1 clerk or photographer-----	\$1,200	1 clerk or photographer-----	\$1,200
1 clerk or photographer-----	1,000	1 clerk or photographer-----	1,000
2 clerks, at \$1,140 each-----	2,280		
1 clerk, at \$1,100-----	1,100	5 clerks, at \$1,100-----	5,500
2 clerks, at \$1,080-----	2,160		
1 clerk, at \$1,020-----	1,020	2 clerks at \$1,000-----	2,000
9 clerks at \$1,000-----	9,000	1 clerk or skilled laborer-----	1,000
1 clerk or skilled laborer-----	1,000		
2 clerks at \$900 each-----	1,800	1 mechanic-----	1,680
1 mechanic-----	1,680	1 clerk or instrument maker--	1,200
1 clerk or instrument maker--	1,200		
1 lantern slide colorist-----	1,320	1 mechanic-----	2,100
1 mechanic-----	2,100	1 mechanic-----	1,800
		1 mechanic-----	1,500
1 mechanic-----	1,500	1 mechanic-----	1,200
1 mechanic-----	1,200	1 skilled laborer-----	1,200
1 skilled laborer-----	1,200	1 skilled laborer or mechanic--	840
1 skilled laborer or mechanic--	840	1 laboratory aid-----	900
1 laboratory aid-----	900	1 telephone operator-----	900
1 telephone operator-----	720	2 laborers at \$900 each-----	1,800
2 laborers at \$900 each-----	1,800	1 mimeograph operator-----	840
		2 messengers or laborers at	
2 messengers or laborers at		\$840-----	1,680
\$840-----	1,680	4 messengers, laborers, or lab-	
2 messengers, laborers or lab-		oratory helpers at \$720	
oratory helpers at \$720		each-----	2,880
each-----	1,440	2 messengers or laborers at	
2 messengers or laborers at		\$660-----	1,320
\$660-----	1,320	4 messengers or laborers at	
4 messengers or laborers at		\$600-----	2,400
\$600-----	2,400	3 messenger boys at \$600-----	1,800
3 messenger boys at \$600-----	1,800	1 fireman-----	720
1 fireman-----	720	8 messenger boys at \$480-----	3,840
8 messenger boys at \$480-----	3,840	11 charwomen at \$240-----	2,640
8 charwomen at \$240-----	1,920		
Total-----	117,300	Total-----	120,720

Mr. MACDONALD. Have I covered the statutory items sufficiently?

Mr. ANDERSON. I think if you furnish that list it will be all we need. I see here telephone operator, in No. 43.

Mr. MACDONALD. We have a very efficient operator who has been with the bureau for several years. She is now receiving \$900 and it is desired to transfer this position from lump fund. The statutory place at \$720 has never been filled.

I believe we have taken a very conservative attitude in the increases recommended in the statutory roll, the advance for our instrument maker and model maker being the largest increases which I have recommended. They are skilled men who could not be easily replaced. The other advances are very nominal.

Item No. 54 is unchanged.

Mr. ANDERSON. I notice you have an increase in No. 53 by transfer from lump fund, an increase of three charwomen. Has there been an increase in your buildings?

Mr. MACDONALD. Yes. We have our agricultural engineering work located in another building. This increase has been necessary on account of an increased number of rooms to take care of. We have two floors in one of the Government buildings directly opposite the Willard Hotel, across Pennsylvania Avenue, in addition to the main building on Fourteenth Street, across from the Willard.

INVESTIGATIONS OF SYSTEM OF ROAD MANAGEMENT AND HIGHWAY CONSTRUCTION.

Item 54 is a general heading. In item No. 55 we have asked for a change in the wording for the purpose of making more clear the work which is done under this item. Last year a number of questions were raised by the committee as to the similarity in the wording of several of our items and we have endeavored by the change of wording to define the character of the work that is done under these items. The item as we are asking it would read: "For inquiries in regard to systems of road management, and economic studies of highway construction, operation, maintenance, and value, either independently or in cooperation with the State highway departments and other agencies, and for giving expert advice on these subjects."

For this item we are asking an increase of \$27,280, which is an increase of \$25,000, plus \$2,280 in the statutory roll.

Mr. ANDERSON. With reference to this language you use the language "and economic studies of highway construction, operation, maintenance, and value." What significance has the word "value" in that connection?

Mr. MACDONALD. Value to the communities in which the highways are built for the movement of traffic.

HIGHWAY COSTS, STUDIES, AND INVESTIGATIONS.

We are running into a period where highway costs are very much higher than formerly and there may now very easily be raised the question in some communities whether for the service we can get from the highways we can afford to build the higher-cost types or should confine ourselves to roads that might give less perfect service but would not cost so much. We feel that the expenditure for highways will have to be very closely connected with and justified by their economic service to the communities in which they are built; in other words, they must earn their way.

Mr. RUBEY. Has there been any appreciable decrease in the cost of highways in the last two or three months?

Mr. MACDONALD. Yes; there has been an actual decrease in the prices of labor and materials, but this has occurred during the period when we are not letting many contracts. We will let our contracts for this year's work, beginning now and continuing for the next several months. There has been a very general policy prevailing among the States to hold up the awarding of contracts until prices have been readjusted to their lowest level. There have been a few cases in which the prices bid—in New York, for example—show a decrease even below the engineer's estimates; so we anticipate there will be a reasonable percentage of decrease in the cost of highways next year.

I should like to bring out this one point, however, that we are not likely to pay less for our highways on the average than we have paid, because we have not been awarding many new contracts during the period prices were at their maximum. We let a large amount of highway work during the calendar years of 1918 and 1919, which, because of delays from various causes, have been carried forward. Some of those contracts are not completed yet; some of them have been completed during the past year. But the prices at the time the

awards were made had not advanced to the highest figure, so, although the prices for highway work have been very high during the past year, we have let no considerable amount of new work, but have been finishing old contracts at prices very considerably lower. I do not anticipate, except in a few States, that our average cost for highways will be much less than we have paid for those which have been actually built. In Pennsylvania, which carried on a very large program this year, I think there will be a reasonable decrease in prices.

Mr. WASON. In regard to the value of the roads with respect to the communities they serve, in reaching your conclusion or statistics relative thereto, do you take into account any travel using the highway other than that of the community bordering on it?

Mr. MACDONALD. Yes; we take into account all of the traffic which uses the highway.

Mr. WASON. For instance, I am acquainted with a highway where quite a portion of the traffic is competitive with the railroads, by trucks traveling north from Boston, Mass., clear up to Vermont, and making regular runs carrying merchandise—what is commonly called freight on the railroads. Do you take that into consideration?

Mr. MACDONALD. That is the point we are emphasizing in the work under item 55. In considering the economic value we try to evaluate the use of highways for extending express, freight, and parcel post service to rural districts. We believe there are possibilities not yet fully appreciated in our highways and the new means of transportation for the building up and maintenance of greater permanency in the agricultural population. Very little authentic data relative to these subjects has been gathered and made available as a basis for legislation or for the determination of highway administration policies.

Mr. ANDERSON. I suppose in determining this value you make what practically amounts to a traffic census. You analyze the traffic over the road, as to its character and everything of that sort, in arriving at what kind of a road ought to be built?

Mr. MACDONALD. That is the point. I was going to illustrate it by a diagram here of a study just completed in California, such as we propose to make elsewhere under this item. The first study was made in that State on the request of the State highway department on account of the uneasiness that is manifesting itself because a number of their roads were failing and the question was raised whether the money was being well spent. In that investigation we made traffic studies covering the whole State highway system in which we were able to calculate the tonnage of agricultural products, and the diagram I have here illustrates the traffic carried as divided between automobiles of different classes, the number of trucks, and other vehicles. This traffic diagram on a road from San Francisco to Crescent City shows the number of vehicles per day. As we approach the larger population centers, Santa Rosa for example, you notice the number increases to nearly 2,000 vehicles per day and then drops again. The top line illustrates the way that the traffic density follows the whole road through its length. At San Pedro the traffic density went to nearly 4,500 vehicles per day.

Mr. WASON. When you say "day," you mean 24 hours?

Mr. MACDONALD. These traffic counts were taken for a 16-hour day, for the hours from 6 o'clock in the morning until 9 o'clock at night.

Mr. WASON. That would be for only two-thirds of the day.

Mr. MACDONALD. Yes; but when probably more than 75 per cent of the traffic was moving. We did not add anything for that period between 9 o'clock at night and 6 o'clock in the morning.

Mr. WASON. But you did take it for the two-thirds of the day during which the heft of the traffic was using the highway?

Mr. MACDONALD. Yes; from 6 o'clock in the morning until 9 o'clock at night. In connection with the census traffic taken on these roads, here is a map showing the agricultural, tillable land in California served by the State highway systems. The shaded portion shows the tillable land. We found that about 12½ per cent of all the traffic on the highways in California was truck traffic; we found only 2 per cent to be horse-drawn traffic and the rest was light and heavy automobile traffic.

Mr. ANDERSON. Is that on the basis of tonnage or numbers?

Mr. MACDONALD. Numbers. That illustrates the character of work that we propose to take up under traffic studies and highway management—that is, the use that is being made of our highways. We must go into the question of the fees that are to be paid by motor vehicles for using the highways. The 12½ per cent of trucks included less than 2 per cent of heavy trucks; and if we build roads adequate for carrying that small per cent of heavy traffic it will add very greatly to the cost of our highways. And we have to settle economically the question whether we will limit the loads that are to come on the highways or will build the highways to take care of any loads that may be brought on them. It would be economically wrong, perhaps, to put the limit at too low a point in a community where there was a considerable amount of heavy trucking necessary to carry forward the business of the community. But in the large agricultural States—we have just put out a bulletin dealing with the use of motor trucks by the farmers—we find on investigation that the farmers confine their use of trucks to 1 and 2 ton trucks, and in those districts we need to carry the comparatively light loads over a large mileage of highways, rather than to carry very heavy loads over a limited mileage such as the same amount of money would build. This is the character of studies which we propose under this item, and in order to get an increase for this work—that is, we feel it more properly comes under this item than under the next item, No. 56—we have decreased item No. 56 by \$19,980.

Mr. ANDERSON. We appreciate your finding your own money.

Mr. MACDONALD. I only want to ask that we do not get the decrease in item No. 56 and fail to have the amount transferred to this other item.

Mr. ANDERSON. I think the committee ought to be appreciative enough not to do that under the circumstances.

Mr. MACDONALD. But the specific purpose, Mr. Chairman, in making this change of wording is not to broaden the scope of the work. I think I am correctly representing to the committee that there would be no activities possible under the changed wording that have not already been possible, and we do not propose that. It is simply to

try to clear up the questions raised by the committee last year as between the several items.

I may say that the man who was employed to head this work, Col. Hess, was called back into the Army temporarily last spring and that work has been carried on by men assigned from our other work.

HIGHWAY CONSTRUCTION.

Item No. 56 also has a change in the wording and, as we request it now, would read:

For investigations of the best methods of road making, especially by the use of local materials; for studying the types of mechanical plants and appliances used for road building and maintenance; for studying methods of road repair and maintenance suited to the needs of different localities, and for furnishing expert advice on these subjects.

We have left out the terms "ordinary sand clay and dirt roads, and the best kinds of road-making materials."

We are continuing to build the sand clay and dirt roads, but a larger proportion of our highways are now built of gravel than of any other material.

Mr. BYRNES. You mean the new construction?

Mr. MACDONALD. New construction; yes.

Mr. ANDERSON. Is that gravel road built without binder, or are you using a binder in connection with the gravel?

Mr. MACDONALD. Natural binders; we are using no artificial binders with the ordinary gravel. We have developed as yet, Mr. Chairman, no satisfactory artificial binder for the ordinary gravel, which contains a large percentage of fine sand and clay as a natural binder. The oiled gravel is satisfactory for a short time, but if we apply bituminous material as a surface coating to the ordinary gravel there does not seem to be a sufficient mechanical bond between the particles making up the road surface to prevent the surface layers peeling in a short time and making a rougher road. The cost of maintenance also is much higher. If we use an oil that does not make a surface coating, it tends to lubricate the material rather than to bind it in place.

So that we find, except in the instances where we can use a material to apply a surface that will take up water, where we have a damp climate and where we can get an absorbent salt of some kind to hold the road together, we have not solved the problem of a binder for gravel roads.

Mr. BYRNES. Do you hope ever to be able to build a sand-clay road that will stand the wear and tear of the trucks that are now being used?

Mr. MACDONALD. No, sir.

Mr. BYRNES. You are still encouraging or approving the building of sand-clay roads?

Mr. MACDONALD. We are approving sand-clay projects; yes.

Mr. BYRNES. But you agree when you do approve them, that they can not stand up under the development of this motor traffic?

Mr. MACDONALD. We are approving the building of sand-clay roads on the same theory we approve the building of dirt roads. The preliminary work is essential in the development of a highway, and we use the same standard of width, drainage, and bridge structure.

which we require when the better surfacing is added. So that we regard the sand-clay surface as valuable, as economical really, during the early stages of the development of that road; but we would not approve a sand-clay road under traffic, already developed, that would destroy the road immediately; that is, we would not approve a sand-clay surface where there is no possibility of its carrying the traffic as it now exists.

Mr. BYRNES. Of course, the only possibility of a general development in certain States is the sand-clay material and it would answer the purposes of all ordinary traffic; but the rapid growth in the use of the large trucks, and mostly by the soft or cold-drink concerns, is destroying the roads and I think presents the real problem for you, because it seems almost like throwing money into a rat hole.

Mr. MACDONALD. Does not that really raise the question in such communities as to whether a very few trucks, perhaps only one-half of 1 per cent of the total traffic, ought to be allowed on those roads carrying heavy loads to the detriment of the other 99½ per cent of the traffic?

Mr. BYRNES. I think it does. I would like to know whether, in your investigation, you have ever estimated the damage done to the sand-clay or dirt road by the use of a truck, especially just after a rain? Have you made such an inquiry?

Mr. MACDONALD. No; we have not studied dirt and sand-clay roads to determine that point but I will bring out later the details of some of the experiments we are conducting along that line and some of the work we are doing.

Mr. ANDERSON. As a rule, you practically have to build a sand-clay road, or at least a good dirt road, before you build a better road?

Mr. MACDONALD. Exactly.

Mr. ANDERSON. You get your drainage and your crown?

Mr. MACDONALD. Yes—cross-section.

Mr. ANDERSON. And after that has been worked down so that it is staple and compacted, then you can put on your real surface. But you have to have your dirt road before you have your other, anyway?

Mr. MACDONALD. We have taken that view. The Federal-aid act says we must build substantial construction. In developing our policies we have taken the view point, that road construction may be considered to have two phases: First, the grading, which is the construction of the side ditches, the building up of the crown, the building up of the drainage structures, the cutting down of the hills, re-locating around the hills, or relocating to avoid railway crossings—in other words, constructing the roadbed in the best natural location we can find, avoiding all the dangers and all the bad topographic features possible. This, we feel, is perhaps the most important fundamentally of any work which we do, because we feel it will be the most permanent. The second phase is the building of the surfaced roadway.

In the construction of the road, under the first phase, we consider, if we find locally a material, such as sand-clay or gravel or dis-integrated granite, as we do in the West, or any comparatively cheap material that will allow us to maintain a better surface for the next few years while the road is settling, and one that can be maintained economically by the use of the ordinary road tools, that we

are justified in the additional cost because of the increased service made possible to the public.

Mr. BYRNES. I thoroughly agree with you; I would not want you to reach any other conclusion. I really believe the solution of a very serious problem depends upon the regulation of the truck traffic—the weight of the truck that can be used on such roads.

Mr. MACDONALD. In the approval of sand-clay and earth roads, particularly in the approval of earth roads, we have a stipulation that when or as soon as funds become available a suitable surfacing will be added to the road. There can be little doubt that earth roads are substantial construction within the terms of the Federal aid act, but not completed construction, and that we must add some form of surfacing later. Unless we take this view we would not be able to get our roads in proper shape for the adding of the more expensive surfacing later.

Mr. BYRNES. Here is what I have in mind: There is no doubt that the sand-clay road in quite a number of States is the best road they can have, because they have the material available and it is their only hope of securing any mileage of improved roads. But the heavy truck is doing such damage that I believe, if you will make any investigation at all, if you will make an investigation in one place in the six or seven States using sand-clay roads and determine the damage done to the roads by the use of these heavy trucks and ever place it before the people, that they will then take some steps to regulate it themselves. They all discuss it now, but they do not realize the damage done by the use of the heavy truck upon those roads.

Mr. MACDONALD. I agree that such an investigation should be made, but our attention has been fixed on the destruction of the more expensive roads by the heavy trucks. We can repair the ruts of the sand-clay roads—that is to say, we can take them out with proper maintenance—but we are unable to mend some of our more expensive roads quite so easily. We should do just what you say—investigate the possibility of saving sand-clay roads by limiting the loads of the trucks and possibly by different types of tires.

Mr. BYRNES. I do not think you can save the road; but if you can give them a pretty good estimate of the damage done I think you can rely upon it they will get busy themselves.

Mr. HARRISON. New Jersey, I understand, now has a limit on the size of truck loads?

Mr. MACDONALD. Yes.

Mr. HARRISON. They have realized it up there, because it cost them \$80,000 a mile to build roads to carry this heavy truck traffic around some of the large centers.

ROAD AND BRIDGE DESIGNS AND SPECIFICATIONS.

Mr. MACDONALD. Under item No. 56, Mr. Chairman—and this is the item which has been decreased by nearly the amount added to item No. 55—we have cooperative agreements through which we are carrying on investigations in bridge and road standard designs and specifications with the Association of State Highway Officials. We are carrying on cooperative studies of road maintenance with the State Highway Commission of Virginia. This is the fund we

use for our extension work, and where counties or districts ask for help on road matters, which they can not secure for their own local organization, men are furnished and paid from this fund.

Mr. ANDERSON. You mean engineers?

Mr. MACDONALD. Yes; assistance furnished from this fund also includes lectures, photographs, lantern slides, and models furnished to the State and local road officials, State fairs, and other associations for general educational purposes. We sent out exhibits this year that were used at 47 of the State fairs. Our publications are prepared under this fund. It is the fund that has been used largely for the extension work done by the bureau, and the only change requested is the decrease of the amount and the change in the wording. I have here a rather extended analysis of the work done, but it is not different from that followed for a considerable period in the past.

INVESTIGATION OF CHEMICAL AND PHYSICAL CHARACTER OF ROAD MATERIALS, ETC.

Mr. MACDONALD. Item 57 is for investigation of the chemical and physical character of road material, for conducting laboratory and field experiments, and for studies and investigations in road design, independently or in cooperation with State highway departments and other agencies. We are asking in this item for an increase of \$71,180. This is the only increase we are asking for the road work proper of the bureau, other than the transfer between funds in the other two items. We have cooperative agreements under this item with the American Society for Testing Materials, the American Concrete Institute, and the American Association of State Highway Officials for the purpose of developing tests for road materials and of unifying practice. We are cooperating with a number of laboratories in tests to check results obtained in these laboratories. We are also cooperating with a number of State highway departments in experimental road construction. We have cooperative agreements now with the State of Illinois, the State of Maryland, and we expect to have agreements with Pennsylvania, Connecticut, and Delaware in highway research activities.

This I regard as the most useful and most needed work the bureau is doing along the line of road work. We are at present making a study of subgrade materials. We have come to the conclusion that, with all of our talk, we know very little about drainage and moisture influence as applied to road construction. It is on this plea that I am asking for this increase of \$71,000 in this item, for the purpose of intensive studies of the fundamental science of road building, and particularly at this time to extend our studies of subgrade materials, which we already have under way, and which have developed some information which is giving us new light in the designing of highways.

Mr. ANDERSON. Have you any cooperation in this work with the Bureau of Soils?

Mr. MACDONALD. Yes; for the California study one of the best soil experts from the Bureau of Soils was assigned. With his assistance we made a study of the soils under nearly 1,200 miles of

State roads and have correlated many road failures with the character of the soils underneath.

Mr. MACDONALD. The Bureau of Standards also cooperated with us there in making the tests of concrete. We have had splendid cooperation from the Bureau of Soils; not only in that specific study, but in the laboratory work. We have held numerous conferences with Prof. Whitney and the other men in the Bureau of Soils and are making use of a considerable amount of work that they have done. In addition to that, their field men are reporting failures of highways as related to the soils. So that we are carrying on full cooperation with that bureau and are avoiding duplication of effort.

A second important study is that of the impact delivered by motor trucks to roads. We have found that it is not so much the weight of the load on the roads of the better types as it is the blow struck by the wheels of the trucks when there is an unevenness in the surface that is causing great damage. We have conducted experiments at the Arlington farm to measure the blow under truck wheels.

After actual measuring the blow delivered to the road surface by truck wheels we have designed and built an impact machine with which we can deliver the same intensity of blow. We then built small slabs of representative road surfaces. This photograph shows a number of slabs composed of the different kinds of material, concrete, brick—different thicknesses and different methods of construction. These are destroyed by the use of the impact machine.

It may be interesting to the committee to know that we have broken all slabs less than 10 inches thick with blows from the impact machine equal to the impact of a five-ton truck equipped with solid tires. This gives a good idea of the intensity of the blows that the heavy trucks are delivering to the roads. Our investigation shows that the same truck fitted with pneumatic tires would deliver a blow of only a very little more than its actual weight; that is, the impact was practically eliminated. But with solid tires worn down to 50 per cent of the original thickness the blow was doubled.

Mr. WASON. Does speed have any effect on that?

Mr. MACDONALD. Yes. The blow struck is a product of the mass, and the vertical acceleration and the speed of the vehicle influences the result.

Under this item we are also carrying on a study of the effect of the impact delivered by motor trucks to road surfaces and a study of the abrasive wear of roads under artificial traffic.

Mr. ANDERSON. What do you mean by "artificial traffic"?

Mr. MACDONALD. This photograph shows experimental sections of different types of road surfaces, including different kinds of aggregate, from very hard granite to comparatively soft slag in the concrete sections, and also granite block, and brick. These are subjected to the wear of five 1,000-pound cast-iron wheels running back and forth over the sections. Each type of surface gets the same abrasion from these cast-iron wheels. The purpose is not to measure the wear on the roads under ordinary traffic, but to compare the resistance to wear of the different types of surfaces.

It may be interesting to the committee that the granite block wear very little better than concrete with a comparatively soft aggregate under this type of traffic; and if the top surface, whether it be con-

crete, granite block, or brick, is well supported, the abrasion is small. It appears that we need not worry so much about the actual wear under traffic of our road surfaces. But wherever settlement occurred in the foundation the surface went to pieces rapidly; we are becoming convinced that the damage to the better types of pavements, at least, are largely caused by the failure of the subgrade to support the surface.

We are also making some bridge investigations to ascertain the impact of these heavy motor vehicles on bridge floors; the standardization of methods of testing bituminous and nonbituminous road materials; an investigation of the effect of variations in methods of manufacture upon the physical and chemical characteristics of bituminous materials; an investigation of nonbituminous road materials; and an investigation of quarry practice. The results of the investigations are published in bulletins and in papers and are given circulation as fast as the studies can be completed. We have in process of production now papers on The Impact of Motor Trucks on Roads; The Effect of Impact on Road Slabs; An Accelerated Wear Test on Pavements; An Investigation of Subgrade Materials; The Design of Roads for Heavy Motor-Truck Traffic; Investigations in the Drainage of the Roads; and An Investigation of the Stability of Blast Furnace Slag.

We are requesting this increase to provide for the necessary engineers to carry on the work, plus \$20,000 for the purchase of new equipment.

In our estimates we are only allowing \$8,000 for contingencies or any salary increases. During the past year we have had representatives from practically all of the State highway departments, municipal engineers interested in highway construction, and the manufacturers of motor trucks visit our experiments, and they have expressed their interest in these researches. I believe that the expenditure for this work will have great results in producing proper standards of design and construction of highways in the future. We are investing very large sums in the building of roads that may or may not stand up under modern traffic, and we should expand the research, which we are doing, on a greater scale than would be possible under this increase.

I stated, Mr. Chairman, we had endeavored to be conservative in our request for increases, and the only increase we are asking for the highway work proper is for the purpose of fundamental research and the development of new knowledge in the science of highway construction.

Mr. RUBEY. Have you studied the question of regulating the traffic on roads and whether the Government could do that or not? For instance, both in Federal aid and through the States we appropriate millions of dollars for the benefit of the people. Ninety-nine per cent of them will use the road without injury, and then along comes the truck, representing probably 1 per cent of the traffic, and destroys the roads. Would Congress have a right to regulate the traffic on roads that receive Government aid?

Mr. MACDONALD. I think so. Congress would certainly have a right to regulate the interstate traffic.

Mr. RUBEY. Sure; I know that.

Mr. MACDONALD. And I feel just as confident that the Congress would have the right to limit the traffic on Federal built roads. If

direct regulation were impractical the extension of aid to the States might be made conditional upon proper regulation.

Mr. RUBEN. Have you any statistics showing the per cent of vehicles that carry heavy traffic, such as 5-ton trucks, as compared with trucks of lesser weight?

Mr. MACDONALD. Yes; we have very definite statistics in a few States. For example, in California our average daily account for a 16-hour day was 1,387 vehicles of all kinds. Of the total 12.5 per cent was truck traffic. We classified 5-ton trucks plus with pneumatic tires and 3-ton trucks plus with solid tires together in one class which constituted only 2.10 per cent of the total traffic.

FOR MAINTENANCE AND REPAIRS OF EXPERIMENTAL HIGHWAYS.

Item 58 calls for the same appropriation as last year. We have asked for a change in the wording, as follows:

For maintenance and repairs of experimental highways, including the purchase of materials and equipment; for the employment of assistants and labor.

This item carried \$60,000 for a number of years. Last year the appropriation was reduced to \$25,000 and this year we have not requested a change in the amount, but we have asked for a change in wording to define more clearly the work we can do with this limited fund. We have a number of experimental roads built by the bureau which we have maintained for a number of years. Last year we gave up the maintenance of the least important from the standpoint of the information which we felt we could get from them and turned them back to the counties and States for maintenance. But we are still maintaining a few of the important experimental roads and are asking the continuance of this appropriation for this purpose. One is a road which ought to be maintained continuously. This is the road leading from the Camp Humphreys road to Mount Vernon. It has been under our jurisdiction for a number of years and is the main road into Mount Vernon. Also, we have found it necessary in making studies of roads that have failed to dig up small sections to take soil samples from underneath and to investigate the structure of the subgrade. We need a small fund with which to repair such places.

We are not asking for funds to continue to build experimental highways, as we did earlier in the activities of the bureau, as we can now make our studies on the Federal-State highways.

IRRIGATION, DRAINAGE, AND RURAL ENGINEERING.

As a general statement referring to the next items, I wish to say that up to the present year, under the bureau, we have carried on three lines of work, which we have called farm irrigation, farm drainage, and rural engineering. These divisions comprise all of the work related to agriculture which is engineering in its nature. For the purpose of correlating our work with that undertaken and carried forward by the agricultural colleges of the States, we have combined these three activities into a division of agricultural engineering.

The first item, No. 59, relates to the agricultural engineering work in irrigation. We are asking no change in the wording, but are asking an increase of \$43,560 in the appropriation, which only restores the item to the prewar figure. If the increase is granted, it will amount to \$105,000; the appropriation for 1918 was \$102,000 and for 1916, \$106,000. During the war this item sustained two consecutive cuts of \$20,000 each. In order to keep our best men—we have suffered losses, of course—but in order to carry on this work until we could get out from under the war conditions, and not to lose these men who had been at work in the division for a long period, we have transferred, so far as we legally could, money from our road fund to carry on this work, believing it to be of so great importance.

A large part of the food products grown in the arid States comes from the irrigated lands and under this one item is being done all of the research work in irrigation which the Government is doing for agriculture on irrigated lands, so we do not believe it is an unreasonable request to ask that the item be restored to the prewar figure.

The major farm-irrigation activities which we are carrying forward are illustrations on this chart. The different symbols show studies relating to the use of water for irrigation, pumping for irrigation, the measurement of irrigation water; the reorganization and reconstruction of existing irrigation systems; the drainage of irrigated lands; and the drainage of nonirrigated Western lands.

ROAD WORK—AGRICULTURAL ENGINEERING—IRRIGATION.

As a general statement, applying both to the road work and the agricultural-engineering work, I will say we are operating, so far as we can, on the principle of cooperation with the State agencies which are in charge of like lines of work. All of our work we possibly can, we are putting on a cooperative basis with some State agency. Our Federal road work is carried on through the State highway departments and our agricultural-engineering work is being carried on largely in cooperation with the State agricultural colleges. I have prepared a chart showing the status of the cooperation for the present fiscal year. It shows the States in which we have cooperation, either with the State agricultural colleges or with other State agencies. Our western headquarters, through which are handled the irrigation projects, is at Berkeley, Calif. The drainage and rural engineering work is handled from Washington. We have cooperation in farm-irrigation investigations in California, Colorado, Nevada, New Mexico, Texas, and Utah as shown by the green; and cooperation in agricultural engineering in Tennessee.

I realize we are asking an advance in this item and will give you an idea of the work that is now going forward.

In Arizona we are studying the effect of pumping plants in relieving water logging and have been cooperating with the chief engineer and directors of the Salt River Valley project in the drainage of the irrigated lands in this district and the development of an additional supply of water for irrigation.

In California we have five principal lines of work, as follows: The irrigation of deciduous orchards, the improving of existing irriga-

tion systems, the preparation of maps showing the irrigated and arable lands, the proper handling of silt-laden water in the irrigation canals, and the cost of irrigation water. A very considerable number of the older irrigated valleys proved to be without system; that is, ditch after ditch was led away from the streams without regard to their relations to each other. We now find that some of the most valuable land has become water-logged from seepage, or over-irrigation, and that we actually have a condition of too much water on certain portions of some irrigation projects, so that the land once valuable can not be cultivated. We also find a very considerable loss of valuable water, much of which could be prevented, and that storage reservoirs are greatly needed to conserve the storm water and make the supply more dependable. If this loss could be cut down, not only could we add to the acreage irrigated, but by reducing the loss of water seepage from water-logging of lands, would be curtailed, and the water would be made available for additional areas that are now without water. This also involves questions of organization, or rather reorganization. The owners of the old ditches have conflicting interests, and reconstruction involves the harmonizing of these interests and organization in some form that will protect the interests of all. This is the type of work we speak of as the improvement of existing irrigation systems.

The method followed is to assist communities to organize irrigation districts so that available water can be used most efficiently and provisions made for storing additional water and extending their irrigated area. Since July 1 eight of these prospective districts have been investigated.

In Colorado we have three principal lines of work—the use of water on the South Platte River and the measurement of water returned to the river by seepage, laboratory experiments with measuring devices, and assistance to drainage districts. The State of Colorado, in connection with the agricultural college, provided at Fort Collins, with State funds, a laboratory costing about \$12,000. We are using this laboratory in cooperation with the college in working out improvements to devices for measuring irrigation water. Both the State engineering department and the college are contributing to the study of return seepage on the South Platte, because it is recognized that this work is leading to an equitable distribution of water from the river and almost eliminating controversies over water rights.

In Nevada we are assisting drainage districts and helping them particularly with advice and supervision in the development of the low-lift pumping plants, as well as cooperating with the State in studies for the improvement of irrigation methods.

In New Mexico we have made studies of ground-water fluctuation as a foundation for the preparation of drainage plans and pumping development, of the possibility of lowering, by pumping, the ground-water level below the soil bed in which the plants take root, and the improvement of irrigation practice in the State. This I regard as a very important line of work there. In the State of New Mexico about 600,000 acres are irrigated. Part of this area is rapidly becoming unfit for cultivation by water logging. In fact, much of it is becoming uninhabitable, because water is standing on the surface of the ground. This is one of the places where the drainage of irrigated

ands is imperative if the land is not to go back to the desert. The main efforts in the State for the past few years have been expended in making preliminary studies of the drainage situation along the river, with the ultimate object of inducing farmers to organize into drainage districts and install effective drainage systems. We have put down something like 900 test wells in our study of the groundwater level. When these lands are drained they will be restored to productivity and yield large returns.

In Texas we are studying the duty of water, and incidentally the measurement of irrigation water and seepage losses from the canals. On the lower Rio Grande, in Texas, there is an area estimated at from 100,000 to 170,000 acres irrigated by pumping water from the Rio Grande. We have been making a study of the pumping plants and canal systems installed there, because a large percentage of the water pumped in the first instance was lost from seepage, and also have been devoting much time to working out improvements in irrigation practice. A good many of the farmers there come from the corn belt, and being unfamiliar with handling irrigated lands had a discouraging time. Our agents have helped them by showing them how to use water. This brings up the nice question of how far the department should go in discouraging land agents who advertise widely and who bring down the prospective customers to invest in these lands, with the idea that they can be irrigated, while there is now already more land sold than the water in normal years will irrigate.

Mr. ANDERSON. If a man were to write you a letter and ask you that question, would you answer it?

Mr. MACDONALD. Absolutely; yes. There can be only one answer to a request of that kind. Here is the situation: On the Rio Grande the water available in normal years is not more than sufficient to meet the present demand. It is true more land can be developed, but the only way it can be done safely would be by storing water in reservoirs, and that would involve an international treaty and international cooperation with Mexico. Such relations would have been difficult to establish within recent years.

Mr. ANDERSON. I was prompted to ask that question because—it must be 15 years ago now—I asked the department for information of that kind in regard to a certain section of Texas and I did not get it. More recently than that, I made the same inquiry with regard to another section of Texas and did get it and was very much gratified. As a matter of fact, I think I saved quite a little money.

Mr. HARRISON. We have made some progress since then, Mr. Anderson. This whole Rio Grande Valley is being studied by different branches of the department as a cooperative project, including the irrigation, marketing, farm management, plant industry, and other phases, and we have accumulated a lot of information about that section.

Mr. MACDONALD. There are many questions that may be answered now that several years ago could not have been answered.

Mr. HARRISON. We have already given out some information, and as a result we have received many protests from people in that vicinity.

Mr. MACDONALD. We are also assisting in Texas in the operation of the largest storage reservoir that has been built there, located about 30 miles west of San Antonio, under the Medina Valley irriga-

tion system. It is in the hands of receivers and we are working with the receivers to put the enterprise back on a basis where it can be operated successfully and supply water to the farmers who bought land with the expectation of irrigating it.

In Weber County, Utah, in cooperation with the State engineer and agricultural college, we are studying the reorganization of the irrigation system; the investigations indicate that by the construction of storage works, the reconstruction of irrigation channels, and the drainage of water-logged lands it will be possible to increase the irrigated area from 50,000 acres to 100,000 acres. Studies of the duty of water and of means for improving methods of utilizing underground water by pumping are also in progress. Assistance is also given to districts organized to drain water-logged lands. Southern Utah contains large valleys with very small surface-water supplies. This division has cooperated with the State and local agencies in demonstrating the practicability of pumping ground water for the irrigation of much of this land. Our work has been principally in advising as to methods of sinking and curbing wells and installing pumps, while the local parties bore the expense. The value of this work was recognized by the State by a special appropriation of \$20,000 for its continuation.

In Washington our principal work has been to aid in the forming of drainage districts and in giving engineering assistance to drainage districts already organized.

In Wyoming assistance has been given to several drainage districts.

We had a cooperative agreement with the State of Oklahoma last year, but owing to lack of funds we have had to abandon that.

By the transfer of some funds from our road work and by appealing to the States we have carried on the work through this period with the hope that after the war was over we would have this item restored. Under cooperative agreement, the States are contributing funds in the following amounts: The State of California \$8,000 and the bureau \$8,000; Colorado contributes \$10,000, the bureau \$4,000; Nevada \$3,500, the bureau \$3,000; New Mexico \$6,500 and the bureau \$2,500; Texas \$7,500 and the bureau \$2,500; and Utah \$5,500 and the bureau \$3,500. The total of these amounts contributed by the six States is \$41,000 and the amount contributed by the bureau \$23,500. This fact, Mr. Chairman, is most convincing proof to me that the States are receiving value from the work, since they are willing to put in nearly two dollars to our one, and in order to keep the work going have increased their cooperation in order not to abandon this work and to hold the trained men. They are specialists in this field and for the research and investigational work the type of men the Government must have in its employ can not be held unless they have a reasonable compensation.

They will work for the Government for less than they will for a private corporation—a considerable percentage less—but it should not in fairness be less than a reasonable compensation as compared to their ability to earn with private concerns. Also, unless they have the funds with which to work they become discouraged. So many of our men in the top positions are having opportunities placed before them now to go with private organizations that we are threatened with losing the most valuable part of the organization.

Mr. ANDERSON. Are there a considerable number of men in the country that are experienced and educated in these lines?

Mr. MACDONALD. No; there are not. There are very few capable and experienced men who are willing to consider such positions, but on the other hand our men are in constant demand from outside; for example, Mr. Rockwell, representing the bureau in the State of Texas for over 12 years, during which time he became very familiar with the State, went to Haiti at three times the salary we were paying him. Mr. Rockwell was succeeded by Mr. Kidder, and Mr. Kidder resigned within a few months to become superintendent of a local irrigation company. We have put the third man on that work, Mr. Hemphill.

Mr. MACDONALD. Do you recall how many men took the last drainage examination, Mr. McCrory?

Mr. MCCRORY. Six for drainage engineer. Three of them, I believe, were our own men.

Mr. MACDONALD. That is, for drainage engineer three outside men passed the examination.

Mr. ANDERSON. Did you finish with item 59, Mr. MacDonald?

Mr. MACDONALD. No; I did not finish with item 59. I had simply finished with the cooperative funds that were being made available by the States. I should like to make this general statement, that the total area of irrigable land in the United States is approximately 18,000,000 acres. Of this area, the work of the Reclamation Service has covered not more than 2,000,000 acres.

Mr. ANDERSON. They do not do any of this research work at all, do they?

Mr. MACDONALD. None that I know of.

Mr. ANDERSON. I made an inquiry about that not very long ago and was advised that they do not do any research work.

Mr. MACDONALD. That question came up in our hearings last year.

Mr. HARRISON. Before the Senate Committee on Agriculture.

Mr. MACDONALD. And also before the House committee.

Mr. HARRISON. It came up very sharply in the Senate committee. Senator McNary raised it and he, I understand, is chairman of the Committee on Irrigation and Reclamation.

Mr. MACDONALD. Following that I conferred with Mr. Davis, the Chief of the Reclamation Service, and asked if he knew of any duplication of work between the Reclamation Service and the bureau. He said he knew of none and that he did not regard the two lines of work as being coincident. The bureau is the only Federal agency that has studied irrigation problems affecting the 16,000,000 acres which have been irrigated through private agencies; in fact, it is the only Federal agency that has authority to do research work on engineering problems relating to the application of irrigation to agriculture. It is generally said that at least 10 per cent of our irrigated lands show need of drainage to relieve seeped and alkaline conditions. Probably at least another 10 per cent are affected by seepage and the accumulation of alkali, but the damages are not yet fully apparent to the casual observer. Since the irrigation and drainage divisions were organized a method of draining seeped and alkalied lands has been developed which corrects these difficulties by removing the cause of the trouble. The problem of draining our irrigated

lands is quite different from that of draining lands in humid regions and it was necessary to develop new methods and practices which in many respects vary wideley from practices in the humid regions.

Answering a question that was raised this morning, in the last three years we have lost 12 competent irrigation engineers.

Mr. ANDERSON. What was the range of the salaries these men were getting?

Mr. MACDONALD. From \$1,800 to \$2,500. A number of these men went into private practice and we have no statement of their income, but of those from whom we have a statement of their new incomes the lowest is receiving \$3,600 and the highest \$7,500.

Mr. ANDERSON. How many of the 12 does that include?

Mr. MACDONALD. We have definite information from 5; 4 others have gone into private practice, so that we have information from about 9 out of the 12.

The research work of the irrigation division has served as the basis for the development of irrigation agriculture on a sound basis. These fundamental investigations have included a study of the flow of water in different types of irrigation channels, such as irrigation ditches, both lined and unlined; wood stave pipe, concrete pipe, and other types of conduits. Then there have been studies on the methods of measurement of irrigation water. We are attempting to develop cheap and practical measuring devices for the purpose and have made encouraging progress toward the development of a measuring flume and water register that we believe will be of very practical value.

A third line of research has been that of the study of the duty of water; that is, the amount of water necessary to use on different kinds of irrigated crops in different sections of the United States.

Another study has been made of the silt problem; that is, the disposal of silt carried by irrigation water, which tends to fill canals and storage reservoirs as well as diversion works. Other projects include the improvement of irrigation structures, improvement in methods of manufacturing concrete pipe used for conveying irrigation water, the movement of soil moisture, and so on. We have just issued a bulletin which presents the results of a study of the capillary movement of soil moisture, one of the fundamental researches that should have been made long ago.

Improvement in existing irrigation systems, as well as the promotion of new enterprises, involve questions of organization and financing. In some States irrigation district laws have been effective, in others they have not. We have made studies of the operation of these laws in order to advise as to improvement in district laws and in order to be able to assist in the organization of districts under the laws. The operation of other laws and forms of organization are being studied also; the more efficient utilization of underground water by pumping, including pumping water to lower the water table and use the water for irrigating other land.

Mr. ANDERSON. I do not just get that.

Mr. MACDONALD. To kill two birds with one stone, lowering the water table by pumping and using the same water to irrigate other land.

Mr. ANDERSON. What is the idea of lowering the water table? That is what I do not get.

Mr. McCrory. As the land becomes water-logged the water table rises until it is so near the surface the land can not grow crops. When the water gets within about 5 feet of the surface, alkali commences to accumulate on the surface until presently there is enough to kill vegetation and crops can not grow. In many irrigated sections the water table has risen a considerable distance and it is now near the surface. In the Salt River Valley, in Arizona, where they are working on such a pumping project, the water table has been rising and is getting to a point where it will cause trouble if the condition is not removed. In some parts of southwestern Arizona I have seen the effect on the cotton crops in the fields; there would be bare spots where the alkali had accumulated and killed the cotton plants.

Mr. Byrnes. And you can not grow cotton on it?

Mr. McCrory. No. But when the water table is lowered by drainage the alkali can be washed out by irrigation and the land brought back again so that crops grow.

Mr. Byrnes. I do not understand what you are doing with that condition. I have seen that condition existing on some of the irrigated lands in the West, where the water has seeped through and caused some destruction; it becomes impounded and gradually comes to the surface, so that you are unable to grow any crops at all.

Mr. McCrory. But when you drain that land most of it comes back quite rapidly.

Mr. Byrnes. How do you drain it?

Mr. McCrory. Through underdrains, chiefly, put down 7 feet or more deep and spaced considerable distances apart, much wider than the practice followed in the East.

Mr. Byrnes. Is that being done out there?

Mr. McCrory. That is being done very extensively. I should judge that a million acres are included in districts that are now being organized or have been organized and are under construction or construction has been completed for the purpose of draining the land.

Mr. Byrnes. What are you doing under this appropriation?

Mr. McCrory. In Arizona we are cooperating with a district which proposes to put down wells instead of digging drainage ditches and to pump water from those wells, in this manner lowering the ground water table over the entire district. The water from the wells will be utilized in another part of the district for irrigation purposes.

Mr. Byrnes. Those drainage districts are doing that work, are they not?

Mr. McCrory. In this case it is to be done by an irrigation district. They are developing water there because where the water supply is short the water developed may be very valuable for irrigation purposes.

Mr. Byrnes. What are you doing under this appropriation, though?

Mr. MacDonald. We supply the engineering assistance; that is, the knowledge and direction necessary for them in carrying out such a project; we pay the engineer's salary and in many cases the parties benefited pay the expenses of the engineer.

Mr. Byrnes. Does he continue to supervise that work or does he simply go there and advise them how it shall be done?

Mr. MacDonald. He continues supervision only until the project is on an actual working basis.

Mr. WILSON. He does not necessarily stay on one project all the time, but goes back often enough to see that they are properly carrying out his instructions.

Mr. ANDERSON. The drainage you have been talking about is drainage connected with irrigation projects?

Mr. MACDONALD. Yes.

Mr. ANDERSON. But it is not drainage in the sense we mean it in northern Minnesota?

Mr. MACDONALD. No; that is handled under the next item. We estimate that on the present irrigation systems by a rearrangement of the system of distribution or the reorganization of the distribution there could be added 1,000,000 more acres of valuable lands to the present areas that are now inadequately supplied. I spoke about that condition this morning, where the irrigation districts of the West have been developed piecemeal, and where it is now necessary to reorganize and redesign the distribution systems, provide additional storage reservoirs to conserve the storm waters, and also provide drainage for the water-logged lands. You see, the two problems go together—reorganization for the better distribution of the water and the drainage of the water-logged lands.

Mr. BYRNES. Is it not a fact, though, that for some time it has been recognized that drainage is essential in most of those irrigation projects; that if it is not provided now there will come a time when some drainage will be necessary; and that being so, what is the necessity of your asking for an increase in this item now, especially if it is a recognized condition that those people are able to meet?

Mr. MACDONALD. To be able to respond to the calls we are getting for help of that character. I brought out this morning that the States were putting—are appropriating—two dollars to one of the Federal appropriation for this class of work; also, it is necessary to develop further methods and research. The greater part of the work that has been done under this item has been done for the development of irrigation rather than the drainage of irrigated lands.

Mr. BYRNES. Most of the work under this item?

Mr. MACDONALD. This is for irrigation.

Mr. BYRNES. I thought you had been explaining that it was done upon drainage work on these irrigation projects where drainage had become necessary.

Mr. MACDONALD. That has been only one small part of the work carried on under the irrigation division.

Mr. BYRNES. What are you doing about irrigation itself? I thought the Reclamation Service was handling that end of it.

Mr. MACDONALD. The Reclamation Service covers less than 2,000,000 acres out of approximately 18,000,000 of irrigated land, and that we are working on the other 16,000,000 acres; that this one division is the only governmental agency that has any appropriation or is authorized to assist the farmers on these 16,000,000 acres with their engineering problems connected with irrigation and, incidentally, the drainage problem connected with irrigation. The Reclamation Service does no research work on these lands, the lands that have been privately irrigated, either by individuals or by companies or corporations; their work is confined to the 2,000,000 acres irrigated by the irrigation works constructed by the Government. We only propose to restore the force, or practically the force, as it

was prior to the time this appropriation was reduced. It was not reduced because the work was not regarded as a very necessary and valuable work, but simply that during the war period it was thought necessary to curtail various activities such as this.

TRAVELING EXPENSES.

Mr. BYRNES. In the item you have a statement showing six additional employees, and you ask for an increase in traveling expenses from \$12,000 to \$37,000.

Mr. MACDONALD. Yes.

Mr. BYRNES. Do the six additional employees necessitate that increase in traveling expenses?

Mr. MACDONALD. No, sir; that would be the necessary increase for the whole force.

Mr. BYRNES. You must expect them to do a great deal more traveling during the next year.

Mr. MACDONALD. As I explained this morning, we have been living from hand to mouth under this appropriation in order to keep as much of the work going as possible with the decreased appropriations. Much of the travel this year is being done on State funds. I have taken every cent possible from the administrative funds of the bureau to put into this class of work, and also we have asked the States to contribute more money than they have have in the past.

Mr. BYRNES. That is a little over \$1,000 a man for traveling expenses. Is that what your experience shows has been spent in the past?

Mr. MACDONALD. For a man in the field, on a moderate salary, the traveling expenses will average a little less than half of his salary. That is the general way to make an estimate; \$1,000 is not too much for a man, and that would be a very reasonable figure for men covering the great distances that these men are required to cover. The headquarters of this work is at Berkeley, but in order to cut down the traveling expenses we station the men at different points in the field. I went over that this morning, but did not give you the names of the men or where they were stationed, because I did not think you cared for that. However, we have had a man stationed in Arizona; five men working in California; two men in Colorado; one in Nevada; one in Texas; two in Utah; one in New Mexico; and one in Washington.

Mr. BYRNES. Is your man in Washington confining his activities to that State or to that immediate section?

Mr. MACDONALD. That immediate section; yes. For example, Mr. Jessup, stationed in Yakima Valley, Wash., looks after the work in the States of Washington and Oregon. Mr. Hart, with headquarters at Salt Lake, exercises general supervision over much of the drainage work of Utah, Idaho, Wyoming, and Montana. Mr. Fellows looks after the irrigation interests of the great plains area.

Mr. ANDERSON. At the risk of exposing my ignorance, I would like to ask you this question: I understand that these farmers own the land and, incidentally, they own a proportion of the irrigation works. How are these works operated? Do they employ people to operate the irrigation works themselves?

Mr. MacDONALD. I am not able to answer that but perhaps Mr. McCrory could answer it.

Mr. McCrory. Some of them own their own water rights and their own ditches just as they own their farms; others are cooperative organizations each farmer owning so many shares of water, or the water may be furnished by commercial organizations similar to a city water supply. Then we have the larger projects which cover a very large area, such as the Carey Act projects, and irrigation districts which are cooperative in character; the organization owns the works and each landowner is entitled to a proportionate share of the irrigation water. The Reclamation Service plans ultimately to turn their projects over to the landowners on the same basis, that is the landowners will eventually own the irrigation works.

FARM DRAINAGE AND DRAINAGE OF SWAMP AND WET LANDS.

Mr. MacDONALD. If there are no other questions on item No. 59 I will pass to item No. 60. We are asking no change in the wording of item 60, but we are asking an increase over last year's appropriation of \$41,240, making a total appropriation of \$95,000. The appropriation for 1917 was \$94,720 and for 1918 \$93,700, so the proposed increase asked makes it practically the same amount. In this item, as with the irrigation item, we received two successive decreases of \$20,000 each, reducing our appropriation for this year to \$53,760.

We are asking that this appropriation be restored to the prewar basis for the purpose of continuing the drainage work on the same basis as it was before the war, or at least to as near the same scale as the same amount of money will now allow us to do. We have cooperative agreements covering the drainage work, or certain portions of it, in Minnesota, Arkansas, Alabama, Florida, Georgia, Tennessee, North Carolina, and West Virginia. We work through State agencies on the farm drainage wherever we find States that have problems which they wish to take up cooperatively. The chart which I am showing here shows the research projects we have in progress as follows: The control of gullying and erosion in the States of Tennessee, Indiana, Kentucky, Mississippi, and Wisconsin; run-off investigations in Mississippi, North Carolina, Florida, and Minnesota; the subsidence of much soils in Florida and Louisiana; the drainage of tillable lands in Arkansas, Alabama, and North Carolina; the durability of concrete tile in Minnesota; the efficiency of operation of pumping plants in Louisiana; the irrigation of tillable lands in the humid regions, particularly in Wisconsin, Florida, Illinois, and New Jersey; the enlargement of drainage ditches by erosion in Missouri and Nebraska, and the construction and design of sedimentation basins. We have cooperative agreements with Alabama, through the experiment station, the State furnishing \$600 and the bureau \$2,500; in Arkansas, through the Agricultural Extension Service, the State furnishing all the expenses of our engineer, but we paying his salary of \$2,100; in Florida through the experiment station, they furnishing the power and maintaining the plant for experimental work on sewage irrigation. I should have pointed out that irrigation in the humid regions——

Mr. ANDERSON (interposing). I think you had better explain that a little more, what you mean by irrigation in humid regions.

Mr. MACDONALD. In Florida the irrigation system is at Gainesville, and in that case the use of sewage for irrigating crops is being studied. The experimental sewage irrigation plant, built in cooperation with the University of Florida, at Gainesville, Fla., was operated with very satisfactory results, the increase in crops resulting from this irrigation being over 200 per cent. If the results obtained last year are representative, it would appear that sewage from small towns and villages could be utilized to advantage for irrigation from an agricultural standpoint, thus making unnecessary, in some instances, the construction of expensive sewage-treatment plants.

Mr. BYRNES. In Florida do they not have this overhead irrigation—this spraying?

Mr. MACDONALD. Yes.

Mr. BYRNES. That is all over the State, is it not? In Florida do you not find irrigation plants all over the State?

Mr. McCrory. There is not, relatively, a great deal of spray irrigation in Florida. New Jersey has a greater acreage under spray irrigation than any other State. There are approximately 20,000 acres in the eastern part of the United States under spray irrigation at the present time; these areas are located in New Jersey, Connecticut, Delaware, Wisconsin, Texas, Missouri, Florida, and South Carolina.

Mr. BYRNES. I know there is in South Carolina and thought the same was true of Florida.

Mr. McCrory. There is some, but a great deal of the irrigation practiced in Florida is surface irrigation, practically the same methods being used as are followed in the West. The cost of spray irrigation has risen greatly in the last few years. In the last estimates we got out, the cost of spray irrigation was over \$500 an acre for the system when ready to use, so that the cost has become almost prohibitive. For that reason we are trying to develop methods of surface irrigation for truck and small fruits that can be applied much more cheaply, and in Florida we have worked out a system of irrigation with sewer pipes for the mains and portable pipes for distribution that is costing probably \$75 per acre, as against \$500 for a spray system. This system is being used quite extensively for irrigating citrus groves in Florida. Similar work is being carried on at other places in an attempt to develop its use for truck crops. There are some types of crops which, I think, we can probably irrigate by the surface method just as well as we can with spray, and do it much more cheaply.

Mr. RUBEY. Do you use this irrigation method during the drought period?

Mr. McCrory. They use it a great deal at all times. A truck grower now plans his crop on a schedule and uses his irrigation to control the growth, and if the rainfall is deficient he irrigates more frequently.

Mr. WASON. Have you made any observations in Massachusetts about this kind of work?

Mr. McCrory. Several years ago some work of that type was carried on in Massachusetts, and we have had one or two projects under consideration there recently, but due to the high cost of installation no one has seen fit to take up that work in Massachusetts. We have

had some work in Connecticut and some in Vermont. One surface irrigation project in Vermont on an apple orchard has been quite successful, according to the man who owns the orchard.

Mr. WASON. What is it that makes it so expensive?

Mr. McCrory. The cost of the pipe and labor, primarily. The pipe is spaced 50 feet apart, and including the pumping plant and installing of the system, the whole costs amount to about \$500 an acre. Some of the Florida overhead systems were torn down in the last two or three years and the pipe sold for more than the original cost, the pipe having increased so much in value. Wrought-iron pipe is commonly used, and that is more expensive than the ordinary steel pipe.

Mr. WASON. Wrought-iron pipe?

Mr. McCrory. Yes; they use that pipe because it will not rust or corrode so rapidly. In Florida the ordinary iron pipe is attacked by the sulphur in the water, which causes it to corrode very rapidly. The life of some of those pipes is only six or eight years, and then has to be replaced, which makes a very high upkeep cost on the plant.

Mr. WASON. Where did you get your statistics for the life of iron pipe—from the South, the Middle West, or New England?

Mr. McCrory. From Florida, where some of the waters contain considerable sulphur.

Mr. MacDonald. We have a cooperative arrangement with Georgia, through the College of Agriculture. One engineer is assigned there, the college furnishing an assistant engineer, office, and stenographic service. In the State of Minnesota we are cooperating with the department of drainage and waters, that department furnishing \$3,200 and we furnishing \$3,200. In the State of North Carolina the State department of agriculture furnishes an office and an assistant engineer, and we furnish one engineer at \$2,500. In the State of Tennessee we cooperate with the agricultural extension service; they furnish \$1,440 and expenses, and we furnish \$1,200, while in West Virginia we cooperate with the agricultural extension service; they furnish \$985 and we the same.

We are carrying on research work relating to farm drainage. This includes an investigation relative to the effect of tile drains upon the ground-water level in North Carolina and Arkansas; studies of the amount of run-off that should be provided for in damming tile drains were made in Minnesota.

Mr. ANDERSON. What are these run-off studies? What do you mean by that?

Mr. MacDonald. The amount of water that must be taken away in tile drains to effect the drainage of the land, so as to keep it in the right shape for the crops. Soil erosion studies were continued, and we have prepared material for a farmers' bulletin on soil-saving dams. Studies relative to the optimum depth of drainage on muck and peat lands in Florida were continued until the latter part of August, when it was necessary for us to stop that work. We are now preparing a report on this investigation. We find that on muck and peat lands there are problems which will require a considerable amount of research work before we are able to answer many of the questions that are now arising relative to the drainage of lands of this character. I wish to point out to the committee in this connection that when I am talking about studying

these problems that are so intimately connected with agriculture. I do not have reference to the studies which are and must be made by the agronomist, the pathologist, or entomologist. We cooperate on the engineering features, the construction, and mechanical features. One of the very important studies which we are making now is that of the effect of alkali upon concrete tile.

That study has been carried on in southern Minnesota. These photographs, which were taken in southwestern Minnesota, show 24-inch concrete tiles which have been in the ground for about four years. The tile have been so decomposed and disintegrated by the action of the sulphates, probably the magnesium sulphate in the soil water, that they have, in some cases, entirely collapsed after only about four years' service in the ground. To remedy such a condition we are endeavoring to define the boundaries of the areas in which concrete tile may be used safely and the areas in which it will be necessary to use some other kind of tile. We believe that it will be possible to pick out areas in which it will be inadvisable to use concrete tile, and we can advise the farmer who lives in this territory and who wishes to drain his farm that it is impossible for him to use concrete tile safely, that he must use some other material. His decision, then, does not hang on the recommendation of some man who is interested in the manufacture and sale of the material. In other areas a careful examination of soil and ground water will be necessary before it can be ascertained whether or not it will be safe to use concrete tile.

Mr. RUBEY. It is your purpose to find out what material he may safely use?

Mr. MACDONALD. Exactly.

Mr. ANDERSON. Is there much of this tile that is going to pieces?

Mr. MACDONALD. We have found difficulties, due to alkali and acid soils, in Missouri, Wisconsin, Indiana, Massachusetts, Virginia, North Carolina, and Maryland. As to its extent, we have made no census, but I should say that there is a considerable territory in which concrete tile may prove unsafe. The failure of the tile shown on these photographs I should call rapid deterioration. Mr. McCrory, can you answer that question more definitely?

Mr. MCCRORY. It is very hard to tell just how much of the pipe is affected; it is all underground and very difficult to inspect, and unless the pipe actually fails or is dug up for other reasons its condition is unknown. We know of 18 distinct failures in southwestern Minnesota; these failures range from a few feet to failures so general over the whole system as to render them practically worthless. We know of failures of 5 or 6 miles of pipe in southwestern Minnesota where I should say the pipe had actually reached a point where it had either begun to collapse or was very seriously damaged by the action of alkali.

Mr. ANDERSON. Is that alkali soil out there?

Mr. MCCRORY. Yes; in places there are some very high concentrations of alkali; it is a rather peculiar condition which seems to be typical of all the eastern edge of the great plains country; the concentration of the alkali varies greatly and is not at all uniform. Acid soils, particularly the peat and muck soils, are causing trouble in other States, so that the problem is rather general all over the country.

Mr. MACDONALD. In addition to these studies we have been making an investigation of the sedimentation basins used for removing silt from streams. A number of these basins have been constructed in various parts of the upper Mississippi Valley, in many instances with results that have not been altogether satisfactory to the land owners. The investigation included surveys of existing basins, and data was obtained which it is hoped will clear up some of the points which have been in doubt and make possible the design of basins that will be much more satisfactory. This outlines the major drainage activities from the investigational and research standpoint. In addition we supply engineering assistance in the same manner as we do for the irrigation work. At the request of district officials or engineers we have reviewed a considerable number of drainage plans.

In some instances changes in plans were recommended which resulted in considerable saving to the districts. In the case of one district a saving was effected amounting to nearly three times the total appropriation for the drainage division. Simply because of improper or too expensive design of the system additional costs were brought about, and we were able to accomplish the necessary results by eliminating that much of the cost. Many opportunities of this character are presented.

We have done also some work on farm drainage in Vermont, which is not under cooperative agreement, but was done at the request of the director of extension there. We have prepared a number of publications relating to farm drainage.

We propose to use the increase, if it is granted, for the enlargement of the force. To illustrate the type of projects on which we are now working, I wish to run over the subjects we are studying now or hope to study: Under the projects—irrigation in the humid section of the United States—we are preparing manuscript for a bulletin on irrigation in the Eastern States, and we are giving assistance to farmers who wish to install either spray or surface irrigation systems. Another project is the construction, operation, and maintenance of drainage improvements. A subproject under this is the effect of alkalis on durability of concrete tile in the north-central States. Another subproject is the maintenance of drainage ditches which is becoming a very serious problem in many places. Another project, drainage of peat, turf, and muck soils. Another project, drainage of tillable lands, another, the control and prevention of erosion and gullying of hillside farm lands. That is an item to which we have given a great deal of attention. Considerable attention has also been given to matter pertaining to the organization, financing, and regulation of drainage districts.

Mr. BYRNES. At how many points have you actually tried this sewage irrigation?

Mr. MACDONALD. Just one—at Gainesville, Fla.; that is the only one we have tried.

Mr. McCRORY. We have two other cooperative plants in New Jersey.

Mr. MACDONALD. Are those all sewage irrigation plants?

Mr. McCRORY. Yes.

Mr. MACDONALD. Then I was mistaken.

Mr. WASON. Are any of those plants in the New England States?

Mr. McCrory. There are two or three so-called sewage irrigation systems in the New England States. We are putting on much less sewage per acre than they do on the average project where they dispose of sewage by irrigation. We think they have tried to put on too much sewage for irrigation purposes, and that is one reason it has not worked very well, while with lighter applications we have been able to dispose of the sewage effectively and also increase the yield of crops like corn very materially.

Mr. Wason. Do I understand that some of these plants in the New England States are crudely constructed and not working well?

Mr. McCrory. They have disposed of the sewage, but the crops grown on the land have not been altogether satisfactory—that is, the returns from the crops.

Mr. Wason. There has been a decrease rather than an increase?

Mr. McCrory. Well, they have irrigated so heavily that they have not gotten the crops they anticipated; that has been the difficulty.

Mr. Wason. Confining it to the territory with which I am more or less familiar, in what part of New England are those projects?

Mr. McCrory. I think there were one or two in Massachusetts and one in Connecticut, if I am not mistaken; I do not remember the names of the towns.

Mr. Wason. There are none in New Hampshire?

Mr. McCrory. Not that I know of.

Mr. Byrnes. What has the bureau which is engaged with you in these experiments to say about sewage irrigation? I imagine there must be some such bureau.

Mr. McCrory. The California State Board of Health has made an order in regard to sewage irrigation which limits it or prevents its use on truck crops, or on any vegetables eaten uncooked; they permit its use for grains, nuts, and similar crops. The New Jersey State Board of Health has been following the work we have done very closely and seem very favorably inclined toward it, in fact, they have recently approved the installation of a sewage irrigation system at one of the State institutions. I might say that in New Jersey we are working with two State institutions, the Women's Home and the School for Feeble-Minded at Vineland; they are both using sewage irrigation to dispose of their sewage.

Mr. MacDonald. Did you wish to bring out the question whether there was any conflict between us and the health authorities in carrying on this work?

Mr. Byrnes. I was just wondering whether the result of this would be that some other bureau would want to make an investigation as to the effect that sewage irrigation would have upon the health of a community?

Mr. McCrory. The New Jersey State Board of Health is following that very closely.

Mr. MacDonald. We are working with the Public Health Service on certain phases of their work. I think they are doing nothing along this particular line.

Mr. Byrnes. The New Jersey State Board of Health does not think it is injurious, then?

Mr. McCrory. They seem very favorably disposed toward it. They were willing to approve the extension of sewage irrigation at the State Insane Asylum this summer, if the board of control wished

to install it. They considered it very fully and finally decided that they would rather use some other method there for other reasons than the efficiency of the system.

Mr. MacDONALD. There are certain crops which I think should not be grown under a system of this kind.

Mr. BYRNES. Lettuce, celery, and stuff of that kind.

Mr. MacDONALD. I had such crops in mind.

Mr. McCrory. That should not be permitted at all.

Mr. MacDONALD. Resuming, in our research work we are conducting run-off investigations: in the Thief River District, Minnesota; run-off from tiled areas, in Murray County, Minnesota; run-off from Third Creek Watershed, North Carolina, and run-off from drainage districts on the east coast of Florida.

There are some extension projects in drainage also. The principal one is that of the drainage of tillable lands; we have extension work on this project in North Carolina, Georgia, Alabama, Tennessee, Arkansas, and West Virginia. Another project is that of the drainage of overflowed lands in the valley of the Red River of the North, and another project the drainage of swamp lands.

I should like to say that in our drainage work in the past three years we have lost 15 men. The total salaries paid them by the bureau was \$29,200; we have reports from all but one of them, and we find that the total salaries paid them on leaving the bureau was \$38,560, an average increase of 32 per cent. It is to prevent the loss of the other competent men we have in this division, and to allow us to build up the work on the same lines that we have been working, that we are asking the restoration of this appropriation to the prewar figure.

Mr. BYRNES. How much of it is for increased salaries?

Mr. MacDONALD. We have allowed in this increase \$20,290 for salaries; we propose to fill the positions we had before, and in which we had a decrease on account of decreased appropriation, amounting to \$15,240, which would leave us less than \$5,000 for salary increases.

Mr. BYRNES. It does not seem from this statement that there is to be any considerable increase in salaries.

Mr. MacDONALD. No.

Mr. BYRNES. Then I misunderstood you. I understood you to say that one reason why you wanted this was to keep men in the service.

Mr. MacDONALD. We are asking very conservatively about \$5,000 to be used in increasing salaries, and we do plan to increase in reasonable amounts the salaries of some of the men we have now.

Mr. BYRNES. You do propose to do that, then?

Mr. MacDONALD. Yes; we do propose to do that to the extent necessary. Another point that I wish to bring out is the fact that we must give these men opportunity. It has been a discouraging outlook that our men have had to face, the fact that these appropriations were cut down for two years in succession and their field of activities decreased.

Mr. ANDERSON. It is as much the limitation of opportunity as it is the failure to increase wages that has resulted in the resignations from your force?

Mr. MacDONALD. Yes. Dr. Fortier, who is in charge of the irrigation division at Berkeley, has written me a number of letters in which he has continuously emphasized the fact that the men do not see a future ahead to keep them interested in this work, since there have

been these decreases in appropriations; in fact, he said in his last letter that he should like to have some assurance of their being able to go ahead with the work or know that it was going to be cut out entirely.

Two heavy decreases successively have decreased the opportunity of the men in the service very considerably.

SUPERVISING THE PREPARATION, DISTRIBUTION, AND USE OF EXPLOSIVES.

The next item, No. 61, is a new item. We are asking \$25,000 "for supervising the preparation, distribution, and use of picric acid, T. N. T., trojan powder, and such other surplus war explosives as may be made available for use in clearing stumps and stones from agricultural land independently or in cooperation with agricultural colleges and other agencies, and for investigating and reporting upon the results obtained from the use of the explosives." We have distributed through the State highway departments a very considerable amount of explosives for use in road building, made available from the war surplus.

Mr. ANDERSON. How did you pay the expense of supervising that distribution?

Mr. MACDONALD. From our administrative funds.

Mr. ANDERSON. That is, the administrative funds which are provided in the act itself?

Mr. MACDONALD. Yes; the law providing for surplus war equipment and materials of all character to be turned over to the Secretary for distribution to the States for road-building purposes. It was an amendment of the Federal aid road act, for which we have an administrative fund. Through another act it is possible for the War Department to turn over explosives to the Secretary of Agriculture for other purposes. We have been advised that there is at present no T. N. T. or trojan powder available, but there are in the neighborhood of 12,500,000 pounds of picric acid, which can be made available, and we propose to use that for land clearing and ditching purposes—for agricultural purposes.

Mr. ANDERSON. Has the arrangement for the transfer of this explosive to the Secretary of Agriculture by the Secretary of War been actually consummated?

Mr. MACDONALD. We have not accepted it, but the offer has been definitely made. We did not accept it until we knew whether we could handle it, as we have no funds available by which we could supervise its preparation and distribution.

Mr. ANDERSON. Will it be distributed to the States cooperatively?

Mr. MACDONALD. We had this plan in mind for its distribution: That we would work through the State agricultural colleges and the county agents, and that we would ship the explosives to any county or any district where the county agent would cooperate in making use of the material and be responsible for collecting the cost; that is, the cost of cartridging and freight. Picric acid has to be cartridged and waterproofed before it is used. We have no definite figures: the cost for T. N. T. is 5 cents per pound for cartridging and the freight would be additional. We propose that all expenses in connection with the cartridging and freight, as well as the handling,

shall be paid by the owner of the land benefited, and that the department would have no expense attendant upon the use of this material except for supervising the actual distribution and use. If it takes less than \$25,000 we, of course, would be glad to turn back the balance, but it is a little difficult for us to estimate the actual cost. We have looked upon this as an investment rather than an increased expense, because 12,500,000 pounds of picric acid would be worth as much as 12,500,000 pounds of dynamite, even of the lower grade: I believe that 40 per cent dynamite costs now about 20 cents per pound and picric acid is stronger than 40 per cent dynamite.

Mr. ANDERSON. Does picric acid deteriorate?

Mr. MACDONALD. It deteriorates; yes.

Mr. ANDERSON. So if this is not utilized it will eventually go to waste, in all probability?

Mr. MACDONALD. Yes. We have been a little hesitant about undertaking to use it for these purposes, because we had been advised that it was a rather unsafe explosive. We find that many erroneous impressions, however, have existed with reference to T. N. T., Trojan powder, and practically all other surplus powders that come into competition with commercial products. We have had the Bureau of Mines make a very thorough test of picric acid, and they have pronounced it safe for use for this purpose. We have endeavored to go into that phase as to its comparative safety thoroughly.

Mr. ANDERSON. Is any special knowledge required in using it? Does it require handling in a certain way or a different way from dynamite?

Mr. MACDONALD. Yes; somewhat different; in order to get the best results in using it there should be some demonstrations made, such as we propose to make. It is a little faster than dynamite, and there should be some instructions given in its use, but not such as to require a large amount of expense. There is no reason why it can not be used without any greater expense than dynamite or any of the other common explosives.

Mr. ANDERSON. T. N. T. deteriorates, too, does it not?

Mr. MACDONALD. No, sir. At least, not rapidly. That impression has been circulated, but if it is properly stored there is very little deterioration of T. N. T.; in fact, T. N. T. is an extremely safe explosive and an extremely stable explosive. It is one of the best explosives we know anything about and it has been very popular in road work. We are hoping that some method will be found to continue the manufacture of T. N. T. on a commercial basis, as at present its cost, as compared with dynamite, is rather prohibitive for general use, but it is one of the best explosives that we have ever had on construction work.

Mr. BYRNES. For what purpose would you have to spend the \$25,000?

Mr. MACDONALD. For administrative purposes.

Mr. BYRNES. The chances are you would not need \$25,000 for it.

Mr. MACDONALD. I should hope not.

Mr. BYRNES. And if it were spent, your statement is that by charging up the expense to the purchaser of it a good part of that amount would be reimbursed to the Government?

Mr. MACDONALD. No; we had not expected to suggest that this amount be reimbursed to the Government, although I believe that

the material would be easily worth the cost. For instance, 12,500,000 pounds of picric acid, if we put it on the same basis as 40 per cent dynamite, would be worth \$2,500,000, and we would be able to cartridge and deliver it for very much less. It is all in bulk now and would have to be put in paper cartridges—half-pound cartridges—and paraffined in order to prevent its deterioration through the absorption of moisture. We believe there is a good profit to be made in salvaging this material for the purpose.

Mr. BYRNES. Then, the purchaser would have to pay the freight?

Mr. MACDONALD. Yes; the purchaser would pay for cartridgeing and pay the freight; that is the cost to the user I referred to.

Mr. BYRNES. Then if the purchaser is going to pay for the cartridgeing and the freight he is going to pay the cost of handling, and the amount you would spend would be—

Mr. MACDONALD (interposing). Simply for salaries and traveling expenses in supervising the distribution and giving such instruction as is necessary in its use. A definite offer has been made to us by the War Department that this material be turned over to us at once.

Mr. BYRNES. Where is this stuff stored at the present time?

Mr. MACDONALD. At Sparta, Wis., and Fort Wingate, N. Mex.

Mr. BYRNES. I was just wondering as to the freight rate to the various sections of the country if it were scattered around.

Mr. MACDONALD. We would cartridge it where it is in storage now; it would be boxed and shipped in cartridge form. I have shown on this chart the States in which there would be use for the surplus explosives.

Mr. ANDERSON. What was the cost of the T. N. T. distribution and supervision?

Mr. MACDONALD. I am unable to answer that question.

Mr. BYRNES. When you distribute it your idea is that the agricultural college should handle it in the State through the county agent?

Mr. MACDONALD. Yes.

Mr. BYRNES. And you would provide for the shipment of so much of it upon the receipt of a check to cover the cartridgeing of it and the freight?

Mr. MACDONALD. Just the cartridgeing of it.

Mr. BYRNES. You would charge for the cartridgeing and let them pay the freight?

Mr. MACDONALD. Yes. Mr. Anderson, on the distribution of the T. N. T. we could separate that, and will do so if you desire it, but the T. N. T. sent to the State highway departments has been handled along with all of the other distribution of materials, and we have never attempted to make a separation of the T. N. T.

Mr. ANDERSON. I do not care particularly for the figures, but I thought if it had been handled separately you could give us the cost so that we might have some idea about it.

Mr. MACDONALD. No; it has been handled just the same as the trucks or any other materials and by the same force. We would want to do more in the distribution of picric acid than we have in the distribution of the T. N. T. in the way of instructions as to its use, but we would hope to have that handled by the State colleges. For instance, in the State of Wisconsin there is an engineer who has already done much work of this kind; we undoubtedly would make him our agent in that State and would probably have to pay a part

of his salary and traveling expenses to supervise the distribution there.

Mr. ANDERSON. I know there is a good deal of demand for this explosive material in northern Minnesota and Wisconsin in clearing lands.

Mr. MACDONALD. There is also in the Pacific Northwest, and we have expected that it could be made use of in drainage and land-clearing operations in some of the Southern States.

Mr. ANDERSON. You referred to 40 per cent dynamite at 20 cents a pound, but I imagine it costs a farmer a good deal more than that.

Mr. MACDONALD. I said 20 cents, and the quotations have been about that.

Mr. WASON. That is wholesale, is it not?

Mr. MACDONALD. That would be in carload lots; yes. You mean where it is bought in less than carload lots?

Mr. WASON. Yes.

Mr. ANDERSON. The person who actually used it would pay a good deal more than that, would he not?

Mr. MACDONALD. Yes; probably 30 cents or more. We have regarded this item as an investment which will make use for agricultural purposes of a very large amount of explosives for which there seems to be no other use. I do not know what its disposition will be if we do not take it. The War Department is now urging us to advise them whether we will take this explosive or not.

FEDERAL RATING OF FARM IMPLEMENTS, TRACTORS, ETC.

For item No. 63 we are asking a change in the wording to read "For investigating and reporting upon, independently or in cooperation with the State agricultural colleges or other agencies, engineering problems pertaining to agriculture, including the construction, capacity, use and operation of farm implements, farm machinery, tractors, and motor trucks and motive power for farm purposes, the construction, heating, lighting, ventilation and equipment of farm dwellings and other structures, with special reference to economizing material and labor and the betterment of living conditions, farm-water supply and drainage disposal; the design of structures and apparatus for the use of the Department of Agriculture in experiment work, and for the preparation and illustration of bulletins relating to these subjects; the purchase and installation of equipment for experimental purposes, the erection of such structures outside of the District of Columbia as may be necessary for experimental purposes only, the employment of assistants and labor in the District of Columbia and elsewhere, rent outside the District of Columbia, and the purchase of supplies and all other necessary expenses, \$100,000, of which \$10,000 shall be immediately available."

FARM POWER.

In this item we are asking for an increase of \$75,000, mainly for the purpose of conducting more thorough studies of farm power, particularly the testing and rating of farm tractors for which there has been a very considerable demand both from the users and the manufacturers themselves. The State of Nebraska is the only State which has

so far undertaken to test tractors, but a large number of the States are very greatly interested in the testing and rating of tractors, because of the wide distribution they are now getting. In 1916 we found that there were 29,670 tractors manufactured, and that has increased until in 1919 we have 164,590 tractors manufactured. We have shown here on a chart the very general distribution of tractors for farm purposes. I have also a copy of some of the reports of tests which are now being made in Nebraska. The users and manufacturers are both agreed that separate testings and ratings should not be made by all of the 48 States, but ought to be undertaken by a Federal agency. As far as possible we propose to do this in cooperation with the State agricultural colleges; this and other work which we propose to undertake under this particular item.

We are also cooperating with the State of Tennessee in connection with agricultural engineering problems affecting that State; also on a project with the committee on ventilation of the American Society of Agricultural Engineers and the agricultural colleges of Michigan and Massachusetts, involving an investigation of and the development of dairy-barn ventilation.

At a meeting of the American Society of Agricultural Engineers held in Chicago the latter part of December, a college section was formed in which all of the agricultural colleges, regardless of membership in that society, are members, and which is to work out a plan for cooperation between the colleges, the bureau, and the American Society of Agricultural Engineers in the development of agricultural engineering work and of a research program. In addition to cooperation in the work along research lines and the farm-tractor tests, we are developing designs for farm buildings and are planning to make a study of the equipment of the farms, farm buildings, farm dwellings, including the lighting, heating, and ventilation. We are now studying some installations of farm water power in Maryland and Pennsylvania and New York, where installations have already been made. We are also giving general information to the farmers through correspondence along agricultural engineering lines. The main purpose for asking this additional appropriation, which we have been asking for unsuccessfully the past three years, is to develop the study of farm power with reference to the farm tractor, to test and rate these farm tractors as manufactured so that the farmer will have available an authoritative test of the actual power that each tractor will deliver if he should purchase and use it on his farm. In 1919, 136,000 tractors were purchased by the farmers of the country at a total cost of about \$200,000,000; purchased without any guarantee or test except that of the manufacturers themselves, and we believe that the present status, and future use of the tractor on the farm will be such as to justify their rating and testing through a Federal agency in cooperation with a State agency.

Mr. WASON. Just what do you mean by Federal rating of the horsepower? What would the test be?

Mr. MACDONALD. The test would consist of work such as the farmer does with his tractor. In making these tests we would determine the brake horsepower, and the power delivered to the drawbar; the tractor would be tested at rated load, at maximum load, half load, and

varying load; the amount of fuel oil and the amount of lubricating oil and grease used would be noted. Any other pertinent facts developed would also be reported.

Mr. WASON. When you say oil, do you mean gas or lubricating oil?

Mr. MACDONALD. By oil consumption I mean the consumption of fuel oil; that is, the consumption of gasoline or kerosene. For instance, in this test we find the brake horsepower developed, the speed, fuel consumed, the kind of oil, and the amount used per hour in gallons and the horsepower developed per gallon; the water consumption, temperatures, etc. This would not be a compulsory test; no company would be required to have the test made; it would be a sort of regulation that would be automatic in its action, for it would not be long before no manufacturer would be able to sell a tractor that was not so tested and rated.

Mr. ANDERSON. How is the complicated result of this test communicated to the purchaser of a tractor in terms he will understand? Perhaps it is not quite so complicated as it seems, but to me it looks rather complicated.

Mr. MACDONALD. It really is not very complicated; that is, the horsepower developed with different loads is given, the maximum horsepower developed, and the amount of fuel used to develop the power. Such a chart as this could be simplified if there was any difficulty in understanding it by the average person. It is my understanding that the farmers are making rather general use of the Nebraska tests.

Mr. BYRNES. You say that a number of States are making this investigation?

Mr. MACDONALD. Only one, the State of Nebraska, and they are calling on us for help, because it has proven much more expensive than was contemplated when they started. There may be more information there than the average person would wish, and the card might be simplified by giving less information.

Mr. WASON. That card simply relates to horsepower and the consumption of fuel. Now, any farmer that wants a tractor, or, at least, the average farmer that wants a tractor, will see a demonstration of the machine he contemplates purchasing, will he not, and can judge about the power from that demonstration, and as to the amount of kerosene consumed he has to rely largely upon what the manufacturer tells him as to that, unless he makes the test himself?

Mr. MACDONALD. He can not make such tests, as he has not the equipment for doing so. If the tractor has been tested and rated, he will know the power it will deliver and the amount of fuel and oil it used during the test. This information can not be secured from a demonstration.

Mr. WASON. Will not the climatic conditions have some effect on this testing and rating?

Mr. MACDONALD. We propose to overcome that by making these tests in various sections of the country.

Mr. WASON. I live in what you would call a cold country, and while one kind of an engine works well in New England the engine that would work here in Virginia would not serve up there.

Mr. MACDONALD. We propose to make these tests under the exact conditions prevailing in the different sections of the country.

Mr. WASON. Is not the real thing which the farmer is interested in not so much the power of his engine or the consumption of fuel as the durability of the material used in the construction of the machine? Is that not the one great fault of manufacturing to-day, that these manufacturers use cast iron when they should use high-grade steel?

Mr. MACDONALD. I think you are correct as to that with some tractors, but in this test any weakness that became apparent is noted and the manufacturers are interested in having these tests carried on. Further than simply making the rating to develop weak points, we propose to go into the actual design of the machine to locate the parts which should be redesigned or strengthened in order to make the machines more satisfactory to the farmer. The farmer is, however, keenly interested in knowing whether or not the tractor he proposes to buy will deliver its rated capacity.

Mr. WASON. Is not the farmer in the same situation to-day regarding the power of the tractor on his farm as was the purchaser of an automobile used to be when first buying a machine? Why should not a department of the Government make the same tests for the purchaser of an automobile as to make these tests of tractors for the farmers?

Mr. MACDONALD. I believe there have been some tests of that kind made.

Mr. ANDERSON. The Bureau of Standards has made some such tests.

Mr. WASON. They have made tests at the request of manufacturers as to the strength of the materials.

Mr. ANDERSON. I remember seeing one of these tests down there myself. They set up a machine and took the power developed at the hind wheels of an automobile; they had half a dozen engines running while I was there, which they were testing for gasoline consumption and power developed and everything else.

Mr. WASON. Has any of that ever been made public? I have never heard of it except from one manufacturer.

Mr. MACDONALD. In 1919 the State of Nebraska had 103 applications for tests of tractors and made 68 tests; on 39 tests no change was found necessary in the rating; in 11 tests there was a change in the rating; in 11 a change in equipment, and in 6 a change in the specifications.

Mr. ANDERSON. Is the Nebraska law a compulsory law?

Mr. MACDONALD. It requires a tractor of each model that is to be sold in the State to be tested, but we do not propose a compulsory law; in that respect it would be automatic in its work, because it would not be long before it was impossible for a tractor manufacturer to sell his tractor unless it was rated and brought up to the standard required. It is one of the best ways in which to regulate industry, to set a reasonable standard which must be met. I should say that there is a very grave need of careful studies being made of the use and development of farm power, not only mechanical power, but also horse power as well, and we have started to make this study in co-

operation with the Bureau of Animal Industry and the Bureau of Farm Management and Farm Economics in order to answer in an authoritative way some of the questions being asked of us by farmers generally and also by manufacturers.

Mr. WASON. My point was not for the purpose of making a comparison, except to inquire where Government activity should begin or cease in regard to censoring manufacturers and if this regulation simply censors to see if they are advertising their product as true or false, why should it not be actually true that if the Government should go into that for the farmer, why is it not proper for the Government to go into it for the man who owns an automobile?

Mr. MACDONALD. There has evidently developed a need for ratings of this character, because one State has already passed a compulsory law and is actively enforcing it. The manufacturer does not wish to face a situation if each State passes laws making different regulations regarding the different tests. This is the reason why I believe the Federal Government should cooperate in establishing a uniformity in the tests which will allow the manufacturer making a single product to sell his tractor in all of the States. It means protection for the better class of manufacturers as well as for the farmer, and the manufacturers are perhaps as eager as the farmers are to have this work undertaken.

Mr. WASON. I imagine more so, although there is need enough from the farmers' standpoint to have some supervision of tractors.

Mr. MACDONALD. Is there any other question, Mr. Chairman, on this matter?

ERECTION OF BUILDINGS OUTSIDE DISTRICT OF COLUMBIA.

Mr. ANDERSON. I want to ask you about one or two provisions in your language. You say "the erection of buildings outside of the District of Columbia"; what have you in mind under that clause?

Mr. MACDONALD. Simply the erection of any minor structures we may need. We often have need of little sheds, temporary buildings, but nothing of a permanent character.

Mr. ANDERSON. That language as it now stands might render it liable to a point of order on the floor. You also have a provision for making \$10,000 immediately available, which might also come under the same head.

Mr. MACDONALD. I have no objection to the elimination of either if they would render the language of the item objectionable on the floor.

FOR GENERAL ADMINISTRATIVE EXPENSES.

In item No. 64, "General administrative expenses," there are no changes either in language or amount. It is the same amount which we have had for a number of years.

Mr. ANDERSON. My attention has been called to a matter here which I want to ask you about. It is a report of the Chamber of Commerce of the United States of America. This is what it says under the title "Farm implements":

A census will show the number and value of different items of farm-operating equipment manufactured in the United States during 1920, the number sold

here, and the number sold for export, and is being collected by the Department of Agriculture. Information will be collected from the manufacturers of farm implements, vehicle, and other equipment.

Then, in another place it goes on to say that this census will be taken by the Division of Agricultural Engineering of the Bureau of Public Roads. Now, this was handed to me with an inquiry as to what difference there was between the census proposed to be taken here and the census which the Census Bureau takes, biennially, I think, as to farm implements and other manufactured articles.

Mr. MACDONALD. We do not propose to devote any considerable time or money to that activity. We have only one man who is giving part of his time to the collection of timely statistical information. From time to time we come face to face with conditions in some part of the country where there will be an actual shortage of farm implements of some particular character. Last year we made a very considerable effort to get certain machines sent to certain parts of the country in time for use, and the principal purpose we have in undertaking this study is to obtain useful and current information as to the numbers and kinds of agricultural implements manufactured. It can not properly be called a census. We have worked with the Bureau of Entomology in developing a dusting machine for the eradication of the boll weevil and are working with the manufacturers to get them to manufacture enough of efficient machines for use.

Mr. ANDERSON. The trouble seems to me to be that they have too many of these machines which are not any good.

Mr. MACDONALD. I do not know of that personally, but am ready to believe that is the case.

Mr. BYRNS. The statement made to the committee was that there was quite a number of them ineffective; in fact, they were warning the farmers against their use.

Mr. MACDONALD. I suspected a situation of that kind, because the Bureau of Entomology has requested again an engineer to develop further these machines.

Mr. ANDERSON. Where do these people get the idea that the Agricultural Department is taking a census of the manufacture of farm implements?

Mr. MACDONALD. I am sure I do not know. We have put out one bulletin dealing with trucks owned and used by farmers in the Eastern States and have material ready for a bulletin on trucks used by farmers in the corn belt States, but the information we gather is secured through questionnaires sent out to manufacturers or farmers.

ARLINGTON (VA.) FARM—FOR CONSTRUCTION OF LABORATORY BUILDING.

Item No. 65 is a new item to supplement the \$75,000 now available for the construction of a laboratory building on the Arlington Farm property of the Department of Agriculture as permanent headquarters for the testing and research work of the Bureau of Public Roads. There is a \$75,000 appropriation, which was made available during the fiscal year 1918, for the erection of this laboratory building, which is to be of a plain, simple type, to get as much

floor space as possible for the expenditure. It will probably be erected of reinforced concrete of the semifactory type. Due to the very considerable increase in the cost of materials and our great necessity for laboratory space, we are asking for an increase of \$75,000, which would make the building cost \$150,000.

Mr. ANDERSON. Has construction been commenced on this building?

Mr. MACDONALD. No, sir; we are erecting a tent in which to carry on our work until we can get an additional appropriation.

Mr. ANDERSON. Let me ask you, is there not now a situation in the building line that would indicate the possibility of lower costs in the near future?

Mr. MACDONALD. Prices are lower now and I do not believe they will be much lower for a building of this particular type for some time. We can do a great deal of this under our own supervision and with our own equipment. The type of building construction must be approved by the Fine Arts Commission.

Mr. BYRNS. Does the Fine Arts Commission have supervision over all the buildings in Potomac Park?

Mr. HARRISON. Yes, sir; and they are very careful of the kind of structure they will permit to be erected there.

Mr. BYRNS. And you have to follow their plans?

Mr. MACDONALD. Yes, sir, Mr. Byrns. I have not looked up the authority, but we submit all our plans to them. I do not believe there is any reason why a building of this type should not be built now. The need is so great that it very much more than offsets the decrease that we are likely to have in the next two or three years.

Mr. WASON. I understand you are now occupying the Willard Building on Fourteenth Street.

Mr. MACDONALD. Yes, sir.

Mr. WASON. And also you are occupying part of a building on Pennsylvania Avenue across from the Willard Hotel?

Mr. MACDONALD. Yes, sir.

Mr. WASON. Have you another building?

Mr. MACDONALD. We have no other buildings, but we are occupying laboratory space in the Willard Building which is very badly needed for other activities.

Mr. ANDERSON. If this building is constructed will you be able to get along without the building on Pennsylvania Avenue?

Mr. MACDONALD. No, sir.

Mr. ANDERSON. That situation would not be changed?

Mr. MACDONALD. No, sir; that situation would not be changed. Some of this work we are carrying on in temporary shacks at the farm, but they are entirely inadequate for this work. We propose now by using a tent to carry on this winter important work in sub-grade and surface investigations. I would like to bring very clearly before the committee that road work has so increased since 1916, and particularly since the war, that we will have to have space outside of these two buildings unless we can relieve it in this manner. I believe that concludes this item.

Mr. HARRISON. If agreeable to the committee, we will take up the insecticide and fungicide board, item No. 281. Dr. Haywood will explain the items.

THURSDAY, DECEMBER 30, 1920.

BUREAU OF MARKETS AND CROP ESTIMATES.

STATEMENTS OF MR. GEORGE LIVINGSTON, CHIEF, BUREAU OF MARKETS; MR. L. M. ESTABROOK, CHIEF, BUREAU OF CROP ESTIMATES; MR. CHESTER MORRILL, ASSISTANT AND DIVISION CHIEF, BUREAU OF MARKETS; MR. W. A. WHEELER, SPECIALIST IN MARKET INFORMATION; MR. W. A. SHERMAN, SPECIALIST IN MARKET SURVEYS; MR. E. G. MONTGOMERY, IN CHARGE FOREIGN MARKET SERVICE; MR. C. W. MANN, POMOLOGIST; MR. W. R. MEADOWS, COTTON TECHNOLOGIST; AND MISS CORNELIA LYNE, ADMINISTRATIVE ASSISTANT.

CONSOLIDATION OF BUREAUS.

Mr. ANDERSON. Mr. Livingston, do you wish to make a general statement?

Mr. HARRISON. Mr. Chairman, as you will note, we are proposing to consolidate the Bureau of Crop Estimates and the Bureau of Markets for reasons which are set out very concisely in the Secretary's report. With your permission, I should like to read the Secretary's statement so it will be in the record. The Secretary says:

I have recommended in the estimates to the Congress that authority be given to consolidate the Bureau of Crop Estimates and the Bureau of Markets. I have been influenced to take this course by a number of important considerations. The first is that each of the bureaus, in accomplishing the important work with which it is charged, needs the additional strength that could be brought to it by some portion of the machinery of the other. In the second place, the legal duties of the two overlap in some directions, and there is a natural and inevitable tendency for each bureau to duplicate a portion of the other's work. This tendency would be eliminated by the proposed consolidation, and confusion in the public mind as to the division of work between the two bureaus would be avoided. Furthermore, crop and market reports could be published together, and farmers and business men would have all the facts in one document. The leased telegraph wires of the Bureau of Markets could be utilized for transmitting crop information to Washington and for its prompt dissemination. In some States the branch offices of the two bureaus could be brought together in the same quarters, and frequently the same crop and live-stock specialists could serve both bureaus, not only in this country but abroad. The operating forces of the two organizations could be combined, as well as the duplicating and mailing services and the staffs dealing with the purchase, custody, distribution, and utilization of supplies. Specialists working along statistical and economic lines in both bureaus could be brought together in a statistical research division to handle statistics of production, consumption, imports and exports, surpluses and deficiencies, and farm and market prices of agricultural products for all countries. In short, the proposed consolidation is in line with good administration and efficiency in the public service and should be put into effect without delay.

That indicates, in a general way, the considerations which led the Secretary to make this recommendation: and as we go through the different items, Mr. Livingston, if it is agreeable to you, will explain them, and as we come to the items that affect the Bureau of Crop Estimates I will ask Mr. Estabrook to discuss them.

Mr. ANDERSON. Mr. Livingston, you may proceed.

Mr. LIVINGSTON. In addition to what Mr. Harrison has read with reference to the proposed consolidation of the Bureau of Markets with the Bureau of Crop Estimates, I should like to state that a very

clear-cut statement of the reason for this proposal is contained in the note at the bottom of page 252 of the bill before you. May I suggest that that statement be incorporated in the record, so that anyone reading the hearings will have a better understanding of the situation?

Mr. HARRISON. I do not think that is necessary, because the same statement is made in what I have just read.

ACTIVITIES.

Mr. LIVINGSTON. I should like to make a brief statement with reference to the work of the Bureau of Markets as a whole.

The work of the Bureau of Markets is divided into three groups of activity, investigational and demonstrational, service, and regulatory work. This year we have an appropriation of \$703,000, approximately, for investigational and demonstrational work. That includes both the lump fund and the statutory roll. The estimates for this year ask for about \$748,000, or an increase of \$45,000, for investigational work.

Mr. ANDERSON. \$703,000 is for investigational and demonstrational work?

Mr. LIVINGSTON. Yes, sir.

Mr. ANDERSON. And you are asking for \$748,000?

Mr. LIVINGSTON. Yes, sir. For the service work this year we have an appropriation of \$874,000, and we are asking for \$2,235,000, or an increase of about \$1,361,000. Most of that increase is due to two items, one the increase in the market information service, and the remainder is due to the transfer of the work of the Bureau of Crop Estimates to the Bureau of Markets, which is shown here as an increase.

Mr. ANDERSON. How much is the amount of the transfer from the Bureau of Crop Estimates?

Mr. LIVINGSTON. The increase to the Bureau of Markets is \$782,646.

Mr. ANDERSON. That is the amount you are asking for now?

Mr. LIVINGSTON. Yes, sir; the increase.

Mr. ANDERSON. Which would otherwise have been under the Bureau of Crop Estimates?

Mr. LIVINGSTON. Yes, sir; that is the increase.

Mr. HARRISON. Chargeable to the Bureau of Crop Estimates?

Mr. LIVINGSTON. Yes; chargeable to the Bureau of Crop Estimates.

Under the regulatory work we have this year \$961,000 and the estimate proposes a total of about \$1,234,000, or an increase of \$273,000, principally for the enforcement of the grain standards act and the warehouse acts. The items as they appear in the estimates are not grouped according to the classification which I have just given you, but for your better understanding of the working of the bureau I think it is well for you to have that picture of the division in the background.

If that is satisfactory I will take up the statutory roll next.

Mr. ANDERSON. I wonder if you can indicate which of these items comes from the statutory roll of the Bureau of Crop Estimates?

Mr. LIVINGSTON. Yes, sir; I have prepared a tabulation of the statutory roll that might be helpful to you in understanding what is

actually being recommended on the statutory roll. The present statutory roll of the Bureau of Markets is \$710,650 and the present statutory roll of the Bureau of Crop Estimates is \$130,580. The present statutory roll of the combined bureaus is \$841,230. The roll proposed in the estimates is \$937,870, or an increase of \$96,640. Of that \$96,640, \$42,200 came about by the recommendation of transfers from the lump fund to the statutory roll, leaving a net increase of new places of \$54,440.

Mr. ANDERSON. Is that increase dependent upon increases in the general items of the bill?

Mr. LIVINGSTON. Almost all of that increase is due to the increases asked for in connection with the Bureau of Crop Estimates, items which would have been asked for regardless of whether or not the transfer was made. I think I can make that a little clearer this way, if I may proceed.

Mr. ANDERSON. Certainly.

READJUSTMENT OF SALARIES, ADDITIONAL EMPLOYEES, PROMOTIONS, ETC.

Mr. LIVINGSTON. We are asking that certain places on the present statutory roll be dropped and that others be substituted therefor. We recommend that 22 clerks at \$1,000, one map tracer at \$900, and one map tracer at \$720 be dropped.

Mr. ANDERSON. We can not do business on the basis of this chart, because we would never be able to locate them in the estimates.

Mr. LIVINGSTON. I think I can locate them.

Mr. ANDERSON. We may get a better view of what happens from this chart, but we must locate these places in the estimates.

Mr. LIVINGSTON. In that event we will have to start at the other end. May I just explain that a little further and then I will proceed. So far as the present Bureau of Markets is concerned we have asked to drop 24 places and to substitute therefor 6 clerks at \$1,600 each and 10 clerks at \$1,400 each—total, \$23,600. By the proposed change substantially the same amount of money is involved—in fact, \$20 less.

So far as the Bureau of Crop Estimates is concerned, we are recommending that a number of places be dropped—1 chief of bureau, \$4,000; 1 clerk at \$1,300; 15 clerks at \$900 each; 3 messengers at \$720 each; and 1 charwoman at \$240; or a total of \$21,200. We are asking that the following places be added instead of those dropped, 9 clerks at \$1,800 each; 10 clerks at \$1,600 each; 17 clerks at \$1,400 each; 11 clerks at \$1,200 each; 1 skilled laborer at \$1,200; 2 messengers at \$900 each; and 1 charwoman at \$360; or a total of \$72,560, whereas the places dropped total \$21,200. There are two promotions of \$3,100. That shows a total increase of \$54,440. In other words, the number of places dropped amounts to \$44,820 and the new places added, \$99,260.

VACANCIES.

Mr. ANDERSON. Are any of the places in the Bureau of Markets that you propose to drop vacant now?

Mr. LIVINGSTON. Yes, sir; there is a map tracer at \$900, a map tracer at \$720; there is one \$1,320 place vacant; there are seven \$1,200 places vacant, one \$1,080 place vacant, and two \$900 places.

Miss LYNE. The \$1,320 place, the seven at \$1,200 each, and the one at \$1,080 are for telegraph operators.

Mr. ANDERSON. Are those vacancies due to your inability to fill the positions at the salaries?

Mr. LIVINGSTON. Yes, sir; we can not find people who will accept those places.

Mr. ANDERSON. How long have they been vacant?

Miss LYNE. About one year, I think.

Mr. ANDERSON. And how many places are vacant in the Bureau of Crop Estimates?

Mr. EASTABROOK. There are nine vacancies in the \$900 grade, or 15 places in the present bill.

Mr. LIVINGSTON. I was going to say that the vacancies at the time the estimates were prepared probably would not correspond with the vacancies now because of changes in the statutory roll.

Mr. ANDERSON. I understand; that is not a constant quantity.

Mr. LIVINGSTON. There is a very rapid turnover in the \$1,000 class, people going and coming frequently.

With respect to the table at the bottom of the page, I want to call your attention to the fact that we ask for certain changes in designation, which do not change the totals. For instance, one executive clerk is provided for instead of one clerk in charge of supplies and accounts, three executive clerks instead of one chief clerk and two clerks, two executive clerks instead of one administrative and one executive assistant; one clerk from one telegraph operator, seven clerks from seven telegraph operators, one clerk from one telegraph operator, and three laborers from three skilled laborers. In no case does that involve a change in the amount of money. The recommendation is made in order that we may have some more consistency in our designations and to utilize certain vacant places.

Mr. ANDERSON. Of course, these telegraph operator places have the salaries fixed on the basis of their being operators and not on the basis of their being clerks?

Mr. LIVINGSTON. Yes, sir.

Mr. ANDERSON. And while the change in title does not actually affect the amount of money involved in the places, still the question arises whether you are going to pay clerks the same salaries that you pay telegraph operators, and, if so, why?

Mr. LIVINGSTON. We will not fill those positions, in the event of the change, by telegraph operators. We will fill them with clerical appointments.

Mr. ANDERSON. That is exactly the point I am making.

Miss LYNE. We did not transfer a certain number of clerks to the statutory roll on account of these changes in designation. The places changed from telegraph operator to clerk are vacant, and we have asked for the change in title so that we can use these vacant places for clerks that we are now carrying on the lump fund.

Mr. LIVINGSTON. The change in the title of the higher positions is for the purpose of permitting some uniformity in the designation of the statutory places. For instance, we would provide that all statutory places from \$2,400 to \$3,000 should be called administrative assistants and that all up from \$1,980, but not including \$2,400, should be designated as executive clerks, and then class 4, class 3.

and so on down. In other words, give some uniformity to the nomenclature.

Mr. RUBBY. Do you retain in the language the designation "telegraph operator"?

Mr. LIVINGSTON. Yes, sir; there are a number of positions provided for on the statutory roll for which we are not asking a change. Does that explain sufficiently the statutory roll?

Mr. ANDERSON. No.

Mr. LIVINGSTON. Would you like to have me take up each of these items?

Mr. ANDERSON. Is there not some way of ascertaining the relationship between this statement and the one in the book? It does not help us any to know that you drop 22 clerks at \$1,000 each unless we know where they are in the estimates. When we come to make up this bill, if we do not give you everything that you ask for, which we probably will not——

Mr. LIVINGSTON (interposing). That will be unfortunate.

Mr. ANDERSON. We will have to consider the whole situation; we can not merely consider the places on the facts presented.

Mr. RUBBY. Please take the statutory roll and go through with it and indicate the changes asked for.

Mr. LIVINGSTON. Item No. 2, which is now designated chief clerk. We ask that that place be dropped and instead of a chief clerk that we have one executive clerk.

Mr. ANDERSON. Is that a Bureau of Markets' place?

Mr. LIVINGSTON. Yes, sir; that is simply a change in designation.

Mr. ANDERSON. We will have a great deal of difficulty with this, because you have combined the two bureaus and put all the clerks together, and it is going to be quite a job to get the thing straightened out.

Mr. LIVINGSTON. I appreciate that.

Mr. BYRNES. You propose that one of the executive clerks shall perform the duties of the chief clerk?

Mr. LIVINGSTON. The bureau is organized in such a way that the work of the chief clerk is divided up among a number of high-grade clerks performing other work also. These clerks are included in what we term our branch of operation. This branch is in charge of an administrative assistant.

Mr. BYRNES. You have now no chief clerk?

Mr. LIVINGSTON. Yes; we have one.

Mr. BYRNES. He is not performing the duties of chief clerk as they are performed in other bureaus?

Mr. LIVINGSTON. He performs certain duties that a chief clerk ordinarily performs, but the rest are divided up among a number of administrative clerks, who are all operating under an administrative assistant.

Mr. RUBBY. There is one difficulty about that. You ask for the dropping of the title of chief clerk, and you will find over here [indicating] where another bureau has asked that an executive clerk be changed to a chief clerk, so that the titles of the various clerks throughout the departments are not uniform?

Mr. LIVINGSTON. I presume that is true; yes, sir.

Mr. RUBBY. I do not remember which one it was, but they assigned in that bureau as a reason that they wanted to make the title conform

to the title in the other bureaus. They are changing to chief clerk and you are changing from chief clerk to something else?

Mr. LIVINGSTON. To executive assistant. So far as the Bureau of Markets is concerned, it is to bring about uniformity in our nomenclature for the clerical positions. It would bring about some uniformity if all clerical positions having a salary attached of \$2,400 to \$3,000 could be administrative assistants, and if the salaries of executive clerks could be from \$1,980 up to, but not including, \$2,400. If the chief clerk remains it will make no particular difference, except some ironing out of the nomenclature.

Mr. ANDERSON. What are the rest of the classifications?

Mr. LIVINGSTON. Administrative assistants, \$2,400 to \$3,000, inclusive; executive clerks, \$1,980 up to, but not including, \$2,400, and then come the clerks of class four, class three, etc.

Mr. ANDERSON. Are both of these administrative assistants, three and four, Bureau of Market employees?

Mr. LIVINGSTON. Yes, sir. Item No. 5, one administrative assistant—by transfer from Bureau of Crop Estimates—with increase of \$600 and change of title; this is to provide for the present chief clerk of the Bureau of Crop Estimates. I think it would be desirable for Mr. Estabrook to make a statement with reference to the increase involved.

Mr. ANDERSON. Very well.

Mr. ESTABROOK. Our present chief clerk, who has occupied that position for several years, is a very competent man, and in addition to the duties which he renders as chief clerk he has acted as secretary for our advisory committee on finance and business methods, which is a departmental committee, constantly overhauling regulations and passing upon complications that arise under that. He has demonstrated his ability to draw up the reports and to do a great deal of investigational work in connection with those questions. He is a man easily worth \$3,000. He has been getting the same salary since 1913 and we feel that a man of his ability is entitled to a fair increase in his salary. Of course, if this consolidation is approved by the committee it means the elimination of his position as chief clerk just as it means the elimination of the position of chief of the Bureau of Crop Estimates.

Mr. LIVINGSTON. The next item is No. 6, one clerk in charge of supplies and accounts, \$2,250.

Mr. ANDERSON. That is a change in designation only?

Mr. LIVINGSTON. Yes, sir.

Mr. ANDERSON. In the Bureau of Markets?

Mr. LIVINGSTON. Yes, sir. The next item is item No. 7, which provides for that change.

The next item, No. 8, six executive clerks at \$2,000 each, an increase of three. These three additional places are submitted in lieu of a chief clerk and two clerks at \$2,000 each, appearing in items 2 and 9.

Mr. ANDERSON. Are those clerks all crop estimate employees?

Mr. LIVINGSTON. No; all Bureau of Market employees.

Mr. ANDERSON. The chief clerk is not?

Mr. LIVINGSTON. The chief clerk of the Bureau of Crop Estimates is under item 5.

Mr. ANDERSON. I see.

Mr. RUBEY. Where are the clerks taken from the Bureau of Crop Estimates indicated on this list?

Miss LYNE. Most of them are indicated under item 13.

Mr. RUBEY. Wherever in this list they are from the Bureau of Crop Estimates it is indicated?

Mr. HARRISON. And the new places that relate to the Bureau of Markets are indicated.

Mr. RUBEY. Those not indicated all belong to the Bureau of Markets?

Mr. LIVINGSTON. Yes, sir. The two clerks included in item 8 are also shown in item 9. One executive assistant in item 10 is dropped and the place is included under item 11, three executive clerks at \$1,980 each, one by transfer from lump fund and two new places. These two additional places are submitted in lieu of the executive assistant and administrative assistant at \$1,980, items 10 and 12.

Mr. ANDERSON. There is no change in salary?

Mr. LIVINGSTON. No, sir. Item 13, 26 clerks, class 4, increase of 15, 6 by transfer from Bureau of Crop Estimates and 9 new places. Those all relate to the Bureau of Crop Estimates.

Mr. ESTABROOK. I think on our statutory roll we are asking for 51 new places and recommending the elimination of 21, leaving a net increase of 30 new places. This is necessary, because for many years the Bureau of Crop Estimates has been practically unable to handle the big volume of work that is constantly increasing, and handle it efficiently as it should be handled. We asked last year for an increase in the statutory roll. We ask an increase this year for the same reason. We need this additional force and need especially some higher salaried positions. We can not get for \$900 or \$1,000 the kind of man we need for high-class statistical work. If we can bring in some competent, experienced clerks in the higher grades, they can do a tremendous amount of work that now has to be done by higher-salaried technical people for lack of anyone to do this kind of work. It is also necessary to have some places in the higher grades so it will be possible to make promotions from time to time as the men earn them, so as to hold out the hope of promotion as a stimulus to better work. So long as we are loaded up with low-grade salaries people become discouraged, and though they stay there year after year, instead of increasing in efficiency, they become less efficient. Unless you can hold out the possibility of advancement at some time in the future as a reward for good work, it is a detriment to the service. That is why we are asking for this increase, in order to have the different grades so as to make a symmetrical organization. The reason stated in the language under item 13 applies to the two or three grades in which we have distributed these increases. The principal reason, of course, is to be able to handle the work efficiently.

Mr. LIVINGSTON. The next item, No. 15, 41 clerks, class 3, increase of 26, 1 by transfer from the lump sum, Bureau of Markets, 9 by transfer from Bureau of Crop Estimates, and 16 new places. Six of those new places are for the Bureau of Markets, under the present arrangement, and 10 for the Bureau of Crop Estimates. The 6 new places for the Bureau of Markets are offset by dropping 22 clerks at \$1,000 each under item 26.

The next is item 19, 82 clerks of class 2, an increase of 47.

Mr. ANDERSON. You have 5 of those by transfer from the lump fund?

Mr. LIVINGSTON. Five by transfer from the lump fund, Bureau of Markets.

Miss LYNE. There are no transfers from the Bureau of Crop Estimates lump fund at all.

Mr. ANDERSON. You have three or four lump-sum funds, have you not?

Mr. LIVINGSTON. We have a number of lump funds or items.

Mr. ANDERSON. There is no indication of what lump fund this comes from.

Miss LYNE. Under each lump fund the clerks transferred are either listed or the aggregate transfers are given. I do not believe that we have that exact data here with us, but we can prepare a table showing that in detail.

Mr. LIVINGSTON. For instance, on page 258, under item 74, there is a transfer of four clerks, one at \$1,560, one at \$1,400, and two at \$1,100 each.

Miss LYNE. We can send you a table showing that in detail.

Mr. LIVINGSTON. The next item is No. 19, 82 clerks of class 2, an increase of 47, 5 by transfer from the lump fund and 15 by transfer from the Bureau of Crop Estimates, and 27 new places. The new places are explained under items 13 and 15.

The next is item No. 20, two clerks, \$1,390 each, an increase of one by transfer from lump funds for the Bureau of Markets to the statutory roll.

Item No. 21 is six clerks, at \$1,320 each, an increase of one.

Miss LYNE. The position of one telegraph operator at \$1,320 is now vacant, and we are asking for the conversion of that place into a clerical position.

Mr. ANDERSON. There was a decrease in your item last year, was there not?

Mr. LIVINGSTON. Yes, sir.

Mr. ANDERSON. Then where did all these clerks on the lump fund go?

Mr. LIVINGSTON. It was necessary to keep them in a great many cases or to have employed others in their places. We have to have a considerable amount of clerical help in connection with certain lines of work which were recently increased, while there were decreases in other lines not requiring so many. In the market information service and statistical work, for instance, we shifted our work in order to have a market information service in a summary form. This required a large amount of clerical help. That accounts for some of these clerks. In other cases the transfers are provided for because the statutory roll has never been large enough.

Mr. ANDERSON. We always thought it was too large.

Miss LYNE. We had to keep a certain number of clerks on the lump fund.

Mr. ANDERSON. I can understand when you get an increase in your lump sums why you might need an increase, if you have not estimated for enough clerks, and I can understand why, under those circumstances, you may need more clerks to be employed out of the

lump fund; but where you have a decrease in your appropriation I can not understand it.

Miss LYNE. Last year we asked for a number of transfers to the statutory roll from the lump fund, and, though you cut out some of them, we had to continue carrying these clerks on the lump fund in order to do our work at all.

Mr. LIVINGSTON. Item 23 is for 231 clerks, class 1, an increase of 58—40 by transfer from the Bureau of Crop Estimates and 18 new places.

Mr. ANDERSON. When you say you transfer them from the Bureau of Crop Estimates, does that mean from the statutory roll?

Mr. LIVINGSTON. Yes, sir; there are no transfers from the lump funds to the statutory roll in the Bureau of Crop Estimates. Seven of the new places are on account of changes from places as telegraph operators and the remainder are new places asked for by the Bureau of Crop Estimates.

Item 25 is for 79 clerks, at \$1,100 each, an increase of 14 by transfer from the lump fund, all from the Bureau of Markets.

Item 26 is for 82 clerks, at \$1,000 each, a decrease of 22 and an increase of 9 by transfer from the Bureau of Crop Estimates, making a total net decrease of 13 places. The 22 places dropped, as before explained, are to offset some higher-salaried places which have been asked for in the items above.

Item 27 is for 14 clerks, at \$1,080 each, an increase of 1, which is a change from a telegraph operator to a clerk. The telegraph-operator position is now vacant, and we can not fill it with a clerk.

The next items in which there are changes are items 35, 36, and 37. It is recommended that these places be dropped and that places as clerks with the same salary be substituted.

The next item is 46, for one map tracer at \$900. It is recommended that that place be dropped and also that item 47 be dropped.

Miss LYNE. They have been vacant for two years.

Mr. LIVINGSTON. The next item in which there is a change is 52, for three machine operators, at \$900 each, an increase of one by transfer from the lump fund. One skilled laborer is also transferred from the lump fund. In the case of the three skilled laborers, at \$900 each, that is a change in title only.

Mr. RUBEY. In item 54 you have one skilled laborer at \$1,200 submitted.

Miss LYNE. That is one of the Crop Estimate places. That is a new place asked by the Bureau of Crop Estimates, in the adjustment of the roll.

Mr. BYRNES. Are all these new places on the statutory roll that are asked for in the interest of the crop estimate work based upon the expansion of the activities of that bureau that is requested in these estimates?

Mr. ESTABROOK. Partly. The increase of the statutory roll is asked for two reasons: One is that the bureau is now undermanned, and has been for some time, and the other is for the proposed expansion of the service.

Mr. ANDERSON. How much is it undermanned?

Mr. ESTABROOK. It is undermanned, I should say, 10 per cent. It is undermanned partly in numbers and partly in the distribution and the kind of people we have. We have too many low-grade

salaries filled by people who are not qualified to do the kind of work that is demanded.

Mr. ANDERSON. That is what everybody says. It would seem that you have no low-grade work in any of these bureaus and that you do not need anybody but high-grade people.

Mr. ESTABROOK. We have some low-grade work, and quite a good deal of it, but we have also some high-grade work.

Mr. RUBEY. Do you not find it more difficult to keep your high-grade clerks?

Mr. ESTABROOK. Yes, sir.

Mr. RUBEY. You lose them and do not lose the others?

Mr. ESTABROOK. That is the process that is going on all the time. We believe we have been like a training school for the benefit of the other departments. When we get a good clerk and he learns how to take up data and summarize it and use his brains on it, the Federal Trade Commission and other people find it out and offer him a higher salary, and we will not stand in his way, but will let him go. Then we start with somebody at the bottom of the line, or with an inexperienced clerk, and it takes a year to develop him. He may not have the capacity for development. That process has been going on for several years, so that we get an accumulation of low-grade people.

Mr. LIVINGSTON. The next item is 56, five laborers at \$900 each, two by transfer from the lump fund and three new places. Those three new places are simply changes in title.

Miss LYNE. These changes in title make it a little easier to use the places.

Mr. LIVINGSTON. Item 58 is for 10 laborers at \$720 each, an increase of 4 by transfer from the lump fund.

The next item is 62, six messengers at \$900 each, an increase of three, one by transfer from the Bureau of Crop Estimates, and two new places. The two new places are for the Bureau of Crop Estimates.

Mr. ANDERSON. Are these messengers, or are they laborers?

Mr. LIVINGSTON. They are messengers. They do heavy messenger work, carrying mail from one building to another. We have offices in five or six buildings. They do that type of work.

Item 65 is for three messenger boys at \$600 each, by transfer from the Bureau of Crop Estimates.

Item 65 is for 12 messenger boys, at \$600 each, an increase of 2, 1 by transfer from the lump fund, and 1 by transfer from the Bureau of Crop Estimates.

Item 68 is for two charwomen, at \$540 each, an increase of one by transfer from the Bureau of Crop Estimates. That is a direct transfer.

Mr. ANDERSON. You have 47 messenger boys here. What do you do with them?

Miss LYNE. Besides having work in five or six buildings in Washington, we have over 70 field offices.

Mr. ESTABROOK. I might say that those messengers are not only for what we understand as purely messenger work, in carrying papers from one bureau to another or from one office to another, but they also are used to fill in on the multigraph machines and all sorts of things like that. They can do work that an employee at a much higher salary would otherwise have to do if they were not available.

Mr. LIVINGSTON. I have prepared here a detailed statement of the number of messengers we have, showing the number of people they serve and their assignments.

Mr. RUBEY. Does that also show that they do other work?

Mr. LIVINGSTON. No, sir; it does not, except indirectly by their assignments.

Miss LYNE. Most of our messengers do other work. You will notice the large number of people that are served in each division. That table indicates the messengers in the field and also those that are in Washington.

Mr. ANDERSON. What do these messenger boys in the field do?

Miss LYNE. They run mimeograph machines, and carry mail and market reports.

Mr. LIVINGSTON. Some of our field offices have quite a lot of messenger work to do.

Mr. SHERMAN. In the inspection service we have to have somebody to answer telephone calls when the inspector is out.

Mr. ANDERSON. Does that complete the statutory roll?

Mr. LIVINGSTON. Yes, sir; that completes the statutory roll.

PUBLIC DISTRIBUTION OF INFORMATION RELATIVE TO MARKETING OF FOODSTUFFS.

Mr. ANDERSON. What is your next item?

Mr. LIVINGSTON. The next item is No. 74. There is no apparent increase in this item, but there is, in fact, an actual increase of \$113,560. I would like to say in the way of a summary of the type of work carried under that item, that it might be divided into five groups. One is the standardization of farm products, with the exception of grain and cotton, and including live stock, wool, fruits, vegetables, dairy products, hay and feed and seeds, and containers for products. Another line of work is the educational and demonstrational work for producers concerning the use of those standards. I do not know whether it would be helpful to the committee, but I have prepared summaries showing just what we are doing under these items, the amount of money we are expending, and the types of work carried on. The third group of activities includes expert advice and assistance in the organization of cooperative marketing associations; the fourth, the improvement of market business practice through the development of accounting systems, and the demonstrational work in connection with the accounting systems; the fifth, which is only a minor part of the work under this item, the study of transportation problems in marketing.

Mr. ANDERSON. Does that include storage, too?

Mr. LIVINGSTON. No, sir; just transportation.

Mr. ANDERSON. What does that cover?

TRANSPORTATION DIVISION—MISCELLANEOUS PROJECTS.

Mr. LIVINGSTON. We have a very small transportation section which really acts as a service department for the entire bureau. This transportation division secures for our market news services the reports from the railroads on which they are based, assists producers in getting information on transportation matters, takes up transpor-

tation questions which are referred to us (formerly with the Railroad Administration, but now with the Car Service Division of the American Railway Association), and deals with the problems that the bureau is obliged to take up with the Interstate Commerce Commission. As I pointed out, this division secures, in connection with our market news services, reports from the railroad officials covering about 50 commodities and 35 destination points. Reports are received regularly now from 500 railroads, which reports are made by 1,200 reporters, covering about 250,000 miles of railroad. It conducts correspondence with those railroad officials, and frequently visits them personally in order to get the reports sent promptly and in proper form. We are spending only \$17,000 on that work, and we are not expecting to increase it this year.

There are, as a matter of fact, 14 different projects either now carried under this lump-fund item or proposed in the estimates. These I have listed as follows: Cooperative purchasing and marketing, marketing fruits and vegetables, transportation, market business practice, foreign-market information, miscellaneous problems of marketing—which is now dropped—cotton handling and marketing, cottonseed marketing—which has been dropped for the present—marketing of live stock and meat, marketing of dairy products, marketing of hay, feed, and seed, marketing statistics and cold-storage reports, market-information service, and the preservation of fruits and vegetables in transit and storage. Now, part of the increase of \$113,560 which we are asking for in this item is caused by the transfer of certain projects to other items. For instance, we are asking for the transfer of \$34,000 for foreign-market investigations, which is shown under item 84; \$28,000 for market statistics and cold storage, which is item 78; \$7,000 for the market-information service, which is item 78; and \$39,000 for the preservation of fruits and vegetables in transit and storage, which is item 75. The \$113,560 will be used for increasing or enlarging the work outlined in the note under item 74.

COOPERATIVE PURCHASING AND MARKETING.

It is proposed to increase the work on cooperative purchasing and marketing to the extent of \$19,230. The work in cooperative purchasing and marketing that we are now doing, and that we are proposing to do, is outlined very briefly in this table that I hand you. You will note from that table that we are now expending \$21,940, including statutory employees, on cooperative purchasing and marketing. If this increase asked for is allowed we will use \$41,170 on that work next year.

The type of work that we are doing is indicated in the statement. It largely consists of giving expert advice and assistance to groups of farmers who desire to form cooperative organizations, either local associations, or to consolidate a number of locals into a larger unit, or to federate large units into State or national organizations. There are now four men on this project, and we desire to increase the personnel so as to take care of the increased demand for assistance of this sort. It is proposed, for instance, to employ one specialist at \$4,500 and two specialists at \$4,000 if this increase is granted. A large part of the increase will be used for the employment of those three men.

Mr. ANDERSON. What will those specialists do?

Mr. LIVINGSTON. On the first page of this report you will see a list of the prominent organizations to which personal assistance has been given.

Mr. ANDERSON. Do you mean that you have had letters from them asking information and that you have told them what to do or answered their letters?

Mr. LIVINGSTON. No, sir; there have been personal visits to those associations. The association writes us or wires us or sends somebody to see us. They ask for definite assistance in the way of addressing meetings, assistance in preparing constitutions and by-laws, and, in fact, definite assistance in putting the organization into a shape where it can operate. You will see that those associations are spread all over the country, and that this work requires a great deal of travel and a great deal of correspondence. In as much as the work is of a kind which can not be well done by correspondence, there is a great deal of personal work that must be done.

Mr. ANDERSON. Does this work consist in assisting them to organize or in the solution of their problems after they are organized?

Mr. LIVINGSTON. Both. For instance, an organization which has been operating for some time may desire to reorganize, or may desire to change its plan from a stock basis to a strictly cooperative basis, or vice versa. Generally speaking the work is intended to assist cooperative associations to operate more efficiently and on a better business basis and to assist new organizations to get started in the right way and with the right principles in mind at the outset. The demand for this work, of course, is increasing very greatly, and it has increased during the past year. The demand is much greater than we are able to meet with our present force.

MARKETING FRUITS AND VEGETABLES.

The next item for which we are asking an increase, or the next line of work under this item is that concerning the marketing fruits and vegetables. This year we are spending \$51,120 on that type of work, and the estimate proposes an expenditure of \$64,320, which is an increase of \$13,200. The increase will be used very largely in the standardization of fruits and vegetables. We are now engaged in establishing standards for peaches, cabbage, tomatoes, asparagus, celery, lettuce, cauliflower, and white Spanish peanuts.

It is desirable to extend that work and to have those standards recommended as soon as it is possible to do so. The increase will be used in employing three new technical men at relatively low salaries.

MISCELLANEOUS STUDIES OF MARKETING.

MOTOR-TRUCK MARKETING.

The next line of work that we propose to inaugurate under the increase concerns marketing by motor truck. That is an item that is carried for two reasons.

Mr. ANDERSON. Is that item referred to under transportation?

Mr. LIVINGSTON. No, sir; that will be combined with the transportation work, however. Here it is set out as a separate unit.

Miss LYNE. It is discussed under paragraph C, on page 259, of the Book of Estimates.

Mr. LIVINGSTON. The Chief of the Bureau of Public Roads asked the Bureau of Markets to secure information on this subject, which will be useful to the Bureau of Public Roads in outlining their public-roads policy.

Mr. ANDERSON. The Post Office Department can give you some information on that, because they have tried it.

Mr. LIVINGSTON. Yes, sir; I know they have tried it. I might say that during the fiscal year 1918-19 the Bureau of Markets did some work in connection with motor-truck marketing, and they accomplished some rather definite things. The work was dropped at the end of the fiscal year because of the lack of funds. We have had a considerable demand for the bulletins that resulted from that investigation, and there have been many requests to extend that work.

Mr. ANDERSON. What is this trucking investigation directed to, or what are you trying to develop?

Mr. LIVINGSTON. We can develop information which will be helpful in a great number of ways. For instance, at the present time we get inquiries as to how effective the truck is in marketing live stock to the central markets, and as to how far a truck can be used to advantage in hauling live stock. For instance, take Indianapolis; inquiries are received as to how much live stock is being marketed in Indianapolis now by motor truck, and how does the cost of marketing live stock by motor truck compare with the cost of hauling in wagons or shipping over railroads?

Mr. BYRNES. What would be the difference between hauling live stock and other commodities?

Mr. LIVINGSTON. I just used that as an illustration. The same thing would apply as to other commodities where they use motor trucks.

Mr. ANDERSON. But conditions would be different this year than they were last year.

Mr. LIVINGSTON. On account of the railroad situation. I appreciate that.

Mr. ANDERSON. And on account of the gasoline situation and the horse situation.

Mr. BYRNES. And the cost of the trucks.

Mr. LIVINGSTON. Yes. We have constantly changing conditions, but the situation is this: We ought to know what the conditions are, what they have been, and keep abreast of the times, so that——

Mr. BYRNES (interposing). You know that the Post Office Department was engaged in this trucking business?

Mr. LIVINGSTON. Yes. What they were doing, however, was entirely different from this. They were attempting to establish routes direct between producers and consumers and similar marketing schemes, but this is a much broader investigation, in which is embraced the whole question of the use of the truck as a marketing agency in getting the commodities from the farm to the local market, from the farm to the central market, and in some cases between central markets.

Mr. ANDERSON. It seems it is so broad that you are not going to get any information that is worth anything.

Mr. LIVINGSTON. We can get a mighty good start with a small appropriation. In other words, we would like to have a man who knows something about the use of motor trucks, who can get all the information that it is possible for one man to get on the subject, which would enable us to answer intelligently inquiries which are constantly coming to us. We need a man who can advise with the Bureau of Public Roads on the question of the use of motor trucks generally in marketing.

Mr. BYRNES. Your idea is that such a man would ascertain, for instance, from the Old Dutch Market people how much it is costing them to use a truck in carrying goods between Washington and Frederick?

Mr. LIVINGSTON. That would be one source of information; yes, sir. You will note on the sheet which I have just handed you what was accomplished in a small way in 1918 and 1919. For instance, we developed an accounting system designed to indicate costs of operation, a standard bill of lading, and approved forms for shipping records. Emphasis was placed on the necessity for the adequate insurance of cargoes, and provisions to be incorporated in cargo-insurance policies were suggested after consultation with responsible underwriters; also the advantages resulting from the use of proper terminal facilities were pointed out. Certain demonstrational routes were studied by us—supervised; we did not maintain the routes.

Mr. ANDERSON. Where were they?

Mr. LIVINGSTON. In Pennsylvania, New Jersey, and New York. As a result of the work we published two bulletins which have been in great demand. The whole proposition is one of keeping up with something we started some time ago, and concerning which there is constant demand for information. We appreciate it is a big question and that we can not solve it with a small appropriation, but we do feel that the Bureau of Markets, dealing with marketing problems, ought to have some one on its staff who can at least answer intelligently questions of this character that come up.

Mr. BYRNES. I will tell you one of your difficulties. You do not charge against the cost of transportation by use of the truck the wear and tear on roads, and in most of the States where they have sand clay roads they are now trying to devise a scheme whereby they can make these trucks either pay a considerable amount for the use of the roads or else prohibit heavy trucks from using the roads, because a heavy truck traveling over a sand clay road just after a rain will do \$500 worth of damage in traversing 50 or 60 miles. As I say, that is not charged to the cost of transportation by truck, but when you consider transportation by rail, the railroads have to maintain the roadbed and that is included as a part of their cost. There are so many things which enter into it that I believe if you spent \$10,000 you would never get anywhere so far as giving any information to the country as a whole is concerned, diverse as are the conditions.

Mr. LIVINGSTON. I appreciate the magnitude of the problem, but the requests that have come for this bulletin and the requests for more information that have followed the receipt of the bulletin, the absence of some one in the bureau who can deal intelligently with the problem and, in addition to that, the request of the Bureau of Public Roads for some information from us on the use of motor

trucks in marketing, seemed to me to justify a small appropriation of \$10,000, and it was on that basis, and on that basis alone, that I inserted the item in the estimates.

Mr. BYRNES. What is the Bureau of Public Roads doing along this line? Are they making investigations, too?

Mr. LIVINGSTON. I think not; they want us to do it so that there will be no duplication of work, because they consider it a marketing problem rather than a road problem.

Mr. BYRNES. What distinction do you draw between this work and the work that the Post Office Department did? How would it affect the cost of transportation?

Mr. LIVINGSTON. I should say that the information which the Post Office Department has with reference to cost and all the information they have been able to collect would be very useful and very helpful to the man working on this problem.

Mr. BYRNES. If you will give the Fourth Assistant Postmaster General the opportunity he will explain to you in detail, down to mills, what it is costing. I do not know whether he is entirely accurate or not, but he will give it to you in dollars, cents, and mills, because it was his idea, and he is most enthusiastic about it. He has spent a lot of money on his investigations and the information he has gathered could be given to the Bureau of Public Roads.

Mr. LIVINGSTON. I think he would be able to give them much that would assist, but I doubt whether the information which he would give would be of a great deal of help.

Mr. ANDERSON. What is the information that the Bureau of Public Roads wants about this thing? What are they trying to find out?

Mr. LIVINGSTON. They are trying to find out this, for instance: They are interested in laying out, as I understand it, a national highway policy in cooperation with the people they are working with—the State highway commissioners—and the question is asked very frequently: What part does the motor truck actually play in getting farm products from the farm to consuming centers?

Mr. ANDERSON. You can easily spend \$10,000 on that and it may be worth while getting; if it is let us go get it instead of spreading this out over the whole United States and figuring that we are really doing something when we are not. If the Bureau of Public Roads wants this information, and it is worth their having, let us go and get it.

Mr. LIVINGSTON. That would be the first job such a man would undertake. Of course, he would find out everything that has been done up to this time by the Post Office Department and other people, and then attack that specific problem. You will note that in the second sentence of this item I have put that first, because I do feel that that is the thing which really justifies the item, aside from the desire of the bureau to have some one in its organization who can answer intelligently questions that constantly come to us on this subject.

COTTON HANDLING AND MARKETING.

The next item in the note is (d), concerning an increase of \$14,700 for cotton handling and marketing. I may say that that work is very largely for the extension of the demonstration work on

cotton standards. It is proposed, if the increase is allowed, that we will spend about \$1,000 on a specialist for part time, \$300 each on 14 agents, and \$1,800 each on 4 agents. The work will be extended in the States of Alabama, California, Georgia, and Arizona, and the work will be enlarged in the States of Arkansas, North Carolina, and Oklahoma. This year approximately 225,000 bales of cotton have been graded in the demonstrations in the States we are now in.

Mr. ANDERSON. Where do you make these demonstrations—at the markets or out on the farms?

Mr. LIVINGSTON. At the local markets. This map shows the location of the demonstrations at present. The work is done cooperatively with the State institutions and with the local organization of farmers; we put very little money into it relatively, but give it supervision.

Mr. BYRNES. The agricultural college selects a man and pays a part of his compensation.

Mr. LIVINGSTON. Yes; pays almost all of the expenses; we pay only a small amount, something like \$300, and after we have been at a place for a year we move on and the local association employs a man and we pay him \$1 a year in order to have some connection with him and supervise his work as much as we can.

Mr. ANDERSON. Do I understand that you locate in one of these cotton marketing places for a year and proceed with these demonstrations the year around?

Mr. LIVINGSTON. No, sir; simply during the cotton marketing season.

Mr. ANDERSON. How long is that?

Mr. LIVINGSTON. During the cotton marketing season of two, three, or four months. I am not familiar with the exact plan of carrying out this demonstration work, but Mr. Morrill, when he arrives, will be able to give you the details of the plan. However, the work is cooperative work with the States.

Mr. BYRNES. What do they pay those men?

Mr. LIVINGSTON. I think they pay them something like \$1,800 or \$2,000.

Mr. BYRNES. And you pay about \$300?

Mr. LIVINGSTON. Yes, sir.

Mr. ANDERSON. Is this cotton classed in the normal course of affairs?

Mr. LIVINGSTON. No; it is not classed there in the normal state of affairs. As I understand it, a local buyer will dicker with a seller and take his cotton. Now, what happens under this arrangement is that the producers around a given shipping point will organize and employ a cotton grader, who will grade their cotton for them, the idea being to teach the people the value of knowing the grade of cotton before sale and how to grade it themselves by employing some one else. A cotton producer is able to sell his cotton more intelligently if he knows the grade of it, and can compare the price he is offered with the quotations he gets from any source. He thus is in a position to deal more intelligently with a buyer.

Mr. ANDERSON. I gathered from the use of the word "demonstration" that what you were possibly doing was going out and holding schools, or something of that kind, for the purposes of demonstration.

Mr. LIVINGSTON. No; we actually grade the cotton.

Mr. ANDERSON. But I gather from what you say now that you actually grade the cotton and that the demonstration is simply incidental to it.

Mr. LIVINGSTON. Yes. This record shows that this year we graded approximately 225,000 bales.

Mr. BYRNES. What you really do is to get your men to go into a community and induce the farmers to organize themselves into an association and subscribe to a fund to employ a grader?

Mr. LIVINGSTON. That is it.

Mr. BYRNES. Then when a grader is employed he is at the service of these people, and when a man presents his cotton to a buyer and the buyer says it is low middling, while he thinks it is middling, the producer goes to the grader and says, "That buyer tried to grade my cotton as low middling," and if the grader says, "It is middling," he can go back and get more for his cotton.

Mr. LIVINGSTON. Yes. I think the work thus far has done a great deal to encourage the use of cotton standards at the primary market, and has undoubtedly had great influence on educating the producer to the point where he can deal more intelligently with the buyer. Heretofore the buyers have known so much more about it than the producers with respect to grades, and that has been to the producers' disadvantage.

Mr. ANDERSON. How much do you have to pay one of these graders?

Mr. LIVINGSTON. I think they are paid from \$1,800 to \$2,400.

Mr. BYRNES. You pay how much?

Mr. LIVINGSTON. We pay about \$300.

Mr. ANDERSON. Are they employed by the year?

Mr. LIVINGSTON. I think so; and I think they do demonstrational work of a different kind during the season when cotton is not moving. I would have to look up the details on that in order to tell you just exactly what they do the rest of the year. Mr. Morrill will be here later in the day and he can give you that information more in detail.

MARKETING OF COTTON SEED.

The next item for which we are asking an increase is item (e), \$8,200, for studying the marketing of cotton seed, and, primarily, to establish grades for cotton seed. That work was underway some few years ago, but last year, with a decrease in the amount of money allotted for this work, the item was dropped. We feel that the importance of cotton seed is such as to justify us in putting a man on the specific task of establishing grades for cotton seed; in fact, quite a lot of preliminary work has been done on it, and this item is inserted with the idea of carrying on that work.

Mr. ANDERSON. How does this grading business get in under this item?

Mr. LIVINGSTON. Grading?

Mr. ANDERSON. Yes; the standardization work. Has it always been there?

Mr. LIVINGSTON. Yes; it has always been there. There are only two specific appropriations for grading work; one of them is for grain and the other is for cotton. The work of establishing standards for all other commodities is carried on under this item.

MARKETING LIVE STOCK, MEATS, AND WOOL.

The next item is item (f) under which we are asking an increase of \$40,210 for marketing live stock, meats, and wool. The bulk of the increase is desired for two specific purposes, to complete the work of the standardization of live stock and to complete the work of the standardization of wool. During the past year we have put out tentative grades of wool and have carried on a large number of demonstrations and a large number of actual grading tests. The sheet, which I have just handed you, shows that we have actually graded almost 2,000,000 pounds of wool this year and carried on demonstrations at a large number of other points. During the year we employed eight wool experts for three months, who carried on these grading demonstrations. The demand for the work is so great, and probably will continue to be so great, on account of the wool pools and the interest of the producer in selling his wool direct, that we would like to employ a few more graders next year, and then to carry on the investigation work resulting from these grading demonstrations to a point where we would feel like promulgating wool standards as definite standards. The standards we are now using are tentative and are being tried out, as it were, in these actual grading demonstrations in order to find out how nearly they meet the conditions.

Mr. ANDERSON. Is there anything like a commercial standard for wool now?

Mr. LIVINGSTON. There are commercial wool standards but they vary greatly. I understand every wool house has its own wool standard, and it is very difficult to get quotations at all comparable between markets or even between firms. As a matter of fact, wool marketing is probably the least understood by the average individual and probably not as well understood by the actual producer of wool as is the case with the producer of any other commodity. The commendations we have received on this wool work indicate that it is meeting a long-felt need, especially at this time when the producers are forming wool pools and actually going into the marketing end of it themselves. The other line of work is the further development of our standards for live stock. It is necessary, it seems to us, to have definite standards for live stock in order that market quotations on live stock may be comparable and that live-stock shipping associations may have something definite in the way of checking up shipments and in determining, before shipment, as to what price is being actually paid for the class of animals they are sending to market. Those two lines of work are the things that we desire to push with the increase of \$40,000 asked for. You may be interested to see some of the work we have done in standardizing live stock and wool, so far as we are able to illustrate it by photographs. It is very difficult to show standards of many commodities in photographic form, but they do give you some idea as to the standardization work as a whole.

Mr. BYRNES. Do you sell the boxes containing these standards to the people?

Mr. LIVINGSTON. No; we have loaned them.

Mr. ANDERSON. That selling, I believe, had reference to cotton.

Mr. BYRNES. But I noticed that this said cotton and wool standards.

Mr. ANDERSON. As I understand, the policy is somewhat different as to cotton.

Mr. LIVINGSTON. Yes. The difference is that wool standards have not yet been definitely set and are not compulsory; it is largely educational and demonstrational work. We are trying to find out whether the present tentative wool standards are actually working out in practice, and we feel, from the investigational point of view alone, that it is to our advantage to get people to use them, comment upon their usefulness, and tell us how nearly they meet the situation. Then after the standards have been established we would, of course, have to establish a different policy with respect to their distribution.

MARKETING DAIRY PRODUCTS.

The next item is that of marketing dairy products, for which an increase of \$3,980 is asked, primarily to standardize dairy products, butter and cheese.

Mr. ANDERSON. We have been trying to get the board, or commission, or whatever it is you have in the department, to adopt a butter standard for 15 or 20 years, more or less, and if you can do it we are more than willing to hand you the job.

Mr. LIVINGSTON. I think we can do it. Two weeks ago we had a conference with the officials of the State Bureau of Markets in Wisconsin and the agricultural college authorities, and agreed on a tentative set of cheese standards which are going to be carried out in the State of Wisconsin. We have thought that the same policy with reference to butter standards can be worked out just as soon as we can get to it. I think the plan must necessarily be the same as we have followed on wool, namely, arriving at something that is as satisfactory as we can and then trying it out, and getting the comments of the people who actually use the standards before attempting to decide on something definite and permanent. That increase, is to employ one man to assist in that work.

MARKETING HAY, FEED, AND SEEDS.

The next item is (h), \$4,040 for marketing hay, feed, and seed, to employ a man to assist in the standardization of hay. That work has gone forward very rapidly this year. We have published one bulletin on hay and have in the course of preparation four other publications.

We have tentative standards for hay formulated but have not made them public, and it is with the idea of continuing that standardization work on hay that the increase of \$4,040 is asked.

Mr. RUBEX. What have you done on the standardization of seeds?

Mr. LIVINGSTON. The standardization of seeds is not being pushed now.

Mr. ANDERSON. My recollection is that the Bureau of Plant Industry has an item in the bill for testing the purity and vitality of seeds.

Mr. LIVINGSTON. Yes, sir.

Mr. ANDERSON. I think these propositions would be more or less related, because I think they would have to establish some standard in order to arrive at conclusions.

Mr. LIVINGSTON. As a matter of general policy last year Dr. W. A. Taylor, of the Bureau of Plant Industry, appointed a committee, composed of officers in the Bureau of Plant Industry and the Bureau of Markets, to consider the general question of seed standards; that committee has the matter under consideration and is working on it. So far as the work of the Bureau of Markets is concerned, and the Bureau of Plant Industry, they are working in complete harmony, and we are doing nothing that is being done by the Bureau of Plant Industry. In other words, we are conducting no vitality tests or purity tests but testing, rather, the marketing end of it, and it would be from that angle that we would approach the standardization work in cooperation with the Bureau of Plant Industry.

COOPERATIVE INVESTIGATIONS OF HANDLING, SHIPPING, REFRIGERATING,
ETC., OF PERISHABLE FARM PRODUCTS.

The next item is 75, and I would like to have the committee hear Mr. Mann on that item, because he is in charge of that particular line of work.

LOSS OF PERISHABLE FOODSTUFFS IN SHIPMENT.

Mr. MANN. This work is directed to reducing the losses that occur in the marketing of fruits and vegetables through decay and deterioration and from freezing. It begins with the methods of handling in the preparation of these products for transportation and for storage, methods of harvesting, grading, and packing. Decay and deterioration of fruits and vegetables in transit are influenced largely by the methods used in harvesting, the care with which the products are handled in the field or orchard, by the methods employed in the packing houses to prevent the injuries that frequently occur in the grading machinery; by car-loading methods which reduce breakage of containers in transit, and in the use of more efficient equipment for refrigeration, cold and common storage, and the refrigerator and heater cars used by the railroads in the transportation of these products. Reports which we have secured recently show that more than \$10,000,000 was lost to the railroads of the country during the past season in claims for the loss of fruits and vegetables through improper methods of handling and packing, through poor refrigeration, and through inefficient equipment used in the refrigeration and transportation of these products to market. Thirty per cent, or nearly one-third, of all the tomatoes shipped from Florida, New Mexico, and other southern producing districts, arrived on the market unfit for food or were dumped. This represents a loss of \$4,500,000 in the tomato crop, which is, to a very large extent, preventable by the adoption of better methods of handling these products. Fifteen per cent of the apples shipped to market were lost from the same causes, including freezing in the cars; 20 per cent of the peach crop last season decayed, partly through faulty methods of handling and partly through improper refrigeration in transit, and the reports indicate that there were 2,500 carloads of watermelons lost. A very large part of this loss can be prevented by proper handling all along the line. These losses are charged to the railroads for faulty transportation service and, of course, are reflected in the prices paid by the con-

sumers for the remainder, and contribute to the shortage of these food products. Other figures could be given to indicate the losses in specific products. I may say that out of 2,189 cars of boxed apples from the Pacific Northwest last year, the certificates of the Inspection Service of the bureau covering the inspection of the fruit showed that 42 per cent of the cars showed from slight to bad freezing.

We also have statistics showing the losses in potatoes. We have had an investigator working with the potato growers and shippers to devise better methods of loading the cars and better methods of heating them. When the temperature drops to 20 or 30° below zero, it is impossible to prevent the freezing without artificial heat, particularly when these products are shipped in box cars, which is quite commonly the case.

Mr. ANDERSON. Are any great quantities of potatoes shipped when the temperature is 20 or 30° below zero?

Mr. MANN. Yes, sir. The potatoes are subject to these temperatures while in transit.

Mr. ANDERSON. I know they have such temperatures, but the question in my mind is whether potatoes are shipped at that time of the year.

Mr. MANN. It is often true that the potatoes leave when the temperature may be above freezing and overnight the temperature drops. We find that condition existing in Wisconsin, Minnesota, and particularly in the Northwest where these products are subject to a long haul, and the shipper can never anticipate very accurately what the conditions are going to be.

There has been a large demand for this poster [indicating] and for the information that it contains as to the loading and heating of box cars. About 10,000 copies of this poster were issued and they were exhausted very quickly, and, I think, it might be said that practically every one of them was used by the shippers. A bulletin was published describing these methods and I do not recall any bulletin that we have prepared on this general subject of preventing wastes in the transportation and storage of these products for which there has been such a demand as there has been for this one. There have been requests for at least 20,000 copies from potato shippers and growers.

A very common trouble in loading potatoes even in cars which have a false lining, is from stopping up the air passages. This poster was issued to point out proper methods of loading. The car is lined with false walls, ends, and floor, with a stove at the center which causes the warm air to circulate around the walls, over the ceiling and down the ends of the car. This shows in the simplest way how to protect potatoes in box cars.

Mr. ANDERSON. Are cars being equipped in that way now?

Mr. MANN. Yes, sir; a very large number of cars are so equipped.

Mr. ANDERSON. Is that being done by the railroad companies?

Mr. MANN. That is being done by the shippers, and the shippers in some cases have an agreement with the railroads by which these cars are returned to them for reloading.

Mr. BYRNES. Are not the cars really equipped by the railroad company and not by the shipper in the majority of cases?

Mr. MANN. No, sir; not in the case of box cars. The shipper has found that it pays to spend \$50 or \$60 a car and equip them in this

way to avoid freezing. Several hundred box cars have been equipped as indicated in Maine, and in Minnesota and Wisconsin. Unless the railroads are to supply very heavily insulated cars, or efficient heater cars, to protect these products against 40 degrees below zero or a higher temperature with prolonged exposure, it is certain that the shippers themselves will continue to protect their own products hauled in box cars.

Mr. RUBEX. What does it cost to equip a car in that way?

Mr. MANN. The stoves vary in price, and when lumber is purchased at average prices the lining should cost between \$50 and \$60.

Mr. RUBEX. Is that the total cost?

Mr. MANN. That is the cost of lining and equipping the cars.

Mr. RUBEX. When they equip a car and load it and it goes to market, they do not get it back, do they?

Mr. MANN. These cars are often returned to the shippers by arrangement with the railroads, under an agreement by which if the shipper will line the car he will get the car again as soon as it can be returned under load.

Mr. RUBEX. So that when it comes back he gets it for another shipment without additional cost?

Mr. MANN. Yes, sir. It is an initial expense which he does not have to repeat.

Mr. ANDERSON. You say as soon as these cars can be returned under load; are they used for ordinary loads coming back?

Mr. MANN. Yes, sir: they are used for ordinary freight.

Mr. RUBEX. And they are used without taking the equipment out, with the possible exception of the stove?

Mr. MANN. Yes, sir.

Mr. BYRNES. It certainly looks like it would be better for the railroads to do that and figure the cost against whoever uses the car.

Mr. MANN. The railroads furnish only their standard equipment. Another line of work which we have been doing to prevent these losses from freezing is to develop a standard heater car for use in the northern sections. It has been found that the portable heaters in the bunkers, which are commonly used now in refrigerator cars, are not efficient. The claims referred to include shipments frozen in refrigerator cars. We have had investigators working out methods of heating the cars. This plan, which has been partially worked out, was approved by the Railroad Administration and recommended to the railroads as the basis of a standard heater car. We have had splendid cooperation from the railroads in working out this design and in an effort to perfect it to a point where it will furnish practical heater equipment for refrigerator cars. This is a combined refrigerator and heater car.

Mr. ANDERSON. Your heater in this design is under the floor.

Mr. MANN. Yes, sir. The work on the heater car has not been completed. For one thing, there has not yet been developed a suitable heater, one that is economical and will stand the very rough usage encountered in service.

Mr. RUBEX. Are those shipments made at the owner's risk, so far as freezing is concerned?

Mr. MANN. The shipments are made at the owner's risk unless he pays for heater service, and in that case he pays a higher rate. If he

is willing to pay a higher rate for heater service, then he can bring claim against the railroad for freezing losses, but if not he assumes the responsibility himself.

Mr. BYRNES. Is it not a fact that many times a shipment is reported in bad condition upon its arrival at destination when as a matter of fact it may be in good condition? I have heard many lawsuits tried over canteloupes, and I never could quite decide what was the fact in the case—whether the man to whom the stuff was consigned had misrepresented the facts or whether they had been really improperly iced.

Mr. MANN. Of course, at the present time the shipper has a way of preventing claims of that sort by having an inspection made by the Bureau of Markets at a nominal cost?

Mr. BYRNES. Yes.

Mr. MANN. Which gives accurate information on the condition of these products. Now, I would like to refer very briefly to the losses from freezing and from decay on a few of these commodities. We have not data on anything like half or probably not one-fourth of the cars in which there was serious loss in the different markets, but in the New York market alone from October, 1919, to May, 1920, the loss in potatoes from freezing and decay out of 350 cars was an average of 12 per cent for every one of the cars, which amounted to at least \$68,000 to the shippers. Those figures can be repeated for potatoes arriving in the Chicago market from Minnesota and the Western States. The losses in that case in 305 cars inspected amounted to an average of 9 per cent.

Mr. ANDERSON. That is a very small proportion of the cars arriving there.

Mr. MANN. Yes, sir; a very small proportion. In the Pittsburgh market the average loss from the actual figures on the cars inspected was 11 per cent, which amounted to \$64,000. Losses in other products, such as cabbage, in the Chicago market in the same period—October to May—amounted to 17 per cent per car due to freezing and decay.

Mr. ANDERSON. Were those losses really due to insufficient refrigeration or heating or were they due to failure to unload or standing around in the yards or to 47 other conditions that I know at times exist?

Mr. MANN. We know that the service is not as rapid as is desirable, and, therefore, the effect of inadequate equipment or lack of refrigeration is emphasized to that extent, and cars that do have to stand around suffer more from not having proper methods of heating to prevent freezing as well as from losses generally due to the delays; but the principal factor has not always been the slow service but lack of refrigeration and lack of effective methods of preventing freezing. These statistics represent both, because they extend over into May and show losses from a combination of causes.

Mr. BYRNES. In so far as the refrigerator cars are concerned, they are certainly furnished by the railroad company?

Mr. MANN. They are.

Mr. BYRNES. And are they iced by the railroad company?

Mr. MANN. They are iced by the railroad company, and they are used also for ventilated shipments which do not move under ice.

Mr. BYRNES. Yes.

Mr. ANDERSON. Are there not a number of organizations owning refrigerator cars independently of the railroads?

Mr. MANN. Yes; there are several private car lines and car lines that are organized to quite an extent, I believe, by the railroads.

Mr. BYRNES. What I am driving at is wherever this damage is due to improper icing by the railroads, it is not due to any lack of knowledge that you may be able to impart to them but is due to carelessness. They know in advance that if the car is not properly iced that the stuff is going to be ruined, and it would do no good to tell them that. If you can devise any way of telling the railroad company how it can employ men who will not be careless, then you might do something.

Mr. ANDERSON. He is trying to make this foolproof.

Mr. BYRNES. That is what I wanted to know, whether you are trying to make it foolproof.

Mr. MANN. If it could be made foolproof it would be a good step in advance. It is not altogether a question of improper icing. Refrigerator cars will not carry the product without deterioration if the cars themselves are inefficient. The cars may be inefficient because they are not properly insulated and because of other features, such as the construction and arrangement of the ice bunkers.

Mr. BYRNES. I can see how you can render assistance to the individual grower or to the association that is equipping these cars, but I fail to see where you can render much assistance to the railroad company, because by their experience it has been brought home to them, and they know that it is just carelessness.

Mr. RUBEY. They know also that if they cause damages it is coming out of their pockets.

Mr. BYRNES. And that is brought to them in the courthouses.

Mr. MANN. The trouble to a very considerable extent is in the equipment that has been used. The railroads in developing their refrigerator-car equipment have not in the past given sufficient attention to the efficiency of that equipment.

Mr. RUBEY. Have they called upon you for information?

Mr. MANN. They have called upon us for help in working out a more efficient refrigerator car. The department has worked out a design for a refrigerator car which is markedly more efficient than the equipment which the railroads have previously had.

Mr. BYRNES. What do they say about this recommendation of yours? Do they agree that it is better than theirs?

Mr. MANN. The department has developed an improved car with the assistance of the individual lines and the United States Railroad Administration. The design of this car was recommended by the Railroad Administration to the railroads as a standard refrigerator car. At the present time practically all of the new cars being built are of this design. But there are approximately 100,000 refrigerator cars in service at the present time, and there have been a comparatively small number of these new cars built. There are probably less than 10,000 of these cars now available.

Mr. RUBEY. Can they remodel the old cars to conform with your new ones?

Mr. MANN. They are remodeling them from the trucks up. After a car has been in service from five to eight years it should be rebuilt.

Mr. RUBEY. It is not practicable to remodel them?

Mr. MANN. No, sir. The standard car has heavier insulation than the present equipment, so that it means rebuilding the car body, and the bunker construction is also changed. Several important improvements are embodied in the construction of this car. These include heavier insulation and a wire basket bunker [indicating] in which the ice is suspended and an insulated bulkhead. There is a two-inch space surrounding the wire ice basket to permit the air to circulate around the mass of ice and floor racks. This arrangement produces a more rapid circulation of cold air through the car, and the spread of refrigeration is about as shown by this red line here [indicating]. With the old equipment this line shows the spread of refrigeration, and this part [indicating] of the load did not receive adequate protection. Practically all the new construction conforms to this standard car. The railroads have given this work their most hearty support. The shippers of fruits and vegetables and other perishables also have been strongly behind it.

Mr. RUBEX. Are you doing any work of that kind toward the protection of shipments in ships?

Mr. MANN. We have not yet done much work, but have recently initiated a little work along that line. There is a great need for such work. The data on the decay losses in the transportation of fruits to Europe have shown that the losses amount to probably not less than 25 per cent of the fruit exported, and the shippers have urged us very strongly to make a study of ocean transportation of the same sort that has been made in the case of the refrigerator car.

Mr. RUBEX. You do not mean 25 per cent of the grain shipments, for instance?

Mr. MANN. No, sir: apples, pears, and other fruits and vegetables—the perishable products.

As to the losses resulting from improper loading this chart shows [indicating] a more or less common condition of grapes in climax baskets. In a study of how these grapes should be loaded to prevent breakage it was found that an arrangement of the baskets in this way [indicating] bound the load together and prevented shifting. The poster seemed to be the best way to publish this information.

The bureau investigators have worked with the growers and shippers in improving the methods of loading. This system has been adopted extensively among the grape shippers and has been a factor in reducing the losses from breakage in transit. This is a very common occurrence [indicating] in the markets with grapes and with other products. Here is another illustration [indicating], showing peaches packed in bushel baskets. There are some difficulties in loading peaches in bushel baskets. We have done practically no work on the proper loading of these packages. Here is a photograph showing the loss from the breakage of boxed apples from the Northwest.

Cantaloupes are loaded usually with braces in the middle of the car, and sometimes the loaders did not brace these supports in such a way that they would not shift upward and come out of place. By running these braces up here [indicating] this can be prevented. Again the braces were weak and sometimes were not properly placed, so that the load shifted.

Mr. ANDERSON. It does not seem to me that it would require a specialist or an expert to work that out. It looks like ordinary

horse sense and reasonable consideration of your own private interests would work out something on that proposition.

Mr. MANN. Yet we find this is the way these cars have arrived with an unnecessary amount of breakage.

Mr. BYRNES. Is not a good part of that due to the fact that you might tell 10 men how to pack these cars properly but about 3 of them are simply not going to do it?

Mr. MANN. They adopt better methods as they are pointed out, although it requires a good deal of work among individual shippers and associations to change established methods.

Mr. RUBEY. Do you not find that these cooperative associations take very readily to your suggestions?

Mr. MANN. They do.

Mr. RUBEY. More so than individuals where they have a cooperative association that is shipping stuff, and are they not anxious to get hold of this information?

Mr. MANN. We find that is true not only in improving their handling in harvesting and through their packing houses but in the adoption of better loading methods. Where the growers are organized improvements can be brought about that can not be accomplished with unorganized shippers.

Mr. BYRNES. How long have you been engaged on this work?

Mr. MANN. We worked with canteloupes one season. The car-loading work was incidental to some other work on refrigeration and the handling of canteloupes.

Mr. BYRNES. Well, as to other fruits then?

Mr. MANN. We have carried on about two years' work on methods of loading.

Mr. BYRNES. You gave some statistics a while ago as to the losses in certain fruits, and what I was driving at is whether or not you have statistics of last year as compared with this year, in order to ascertain whether as a result of the information you are disseminating, there has been any reduction in the losses?

Mr. MANN. We find that the cars in which the products are properly loaded go through in good condition.

Mr. BYRNES. Of course, you know that if the car is properly handled that it is going to go through all right, but what I wanted to know was the result you were obtaining from this work that you are doing and whether they are adopting it?

Mr. MANN. Yes, sir. The growers and shippers are adopting these methods and the improvements are apparent in the condition of the products arriving in the markets. In California the largest association of orange growers, representing about 75 per cent of the industry, the California Fruit Growers' Exchange, have stated that the methods which have been worked out by the department and adopted have meant a saving of several million dollars a year to their industry.

Mr. RUBEY. It seems to me that an association of that kind which does that amount of business would have long ago worked out these things for their benefit.

Mr. MANN. They are gradually establishing their own departments to improve their methods of handling.

Mr. RUBEY. Have they waited for the department to do this work before they have taken it up?

Mr. MANN. They have put this up to the department pretty strongly because it requires equipment which they have not had and trained investigators. For instance, in our refrigerator-car work it has been necessary to study the temperatures of the product in different types of refrigerator cars and under different methods of handling, icing, and so on, and the growers themselves are not in a position to put investigators on that work who have had the specialized training, to determine where the trouble is in the matter of handling or refrigeration.

STORAGE OF SWEET POTATOES.

Mr. ANDERSON. You have requested an increase here of \$35,000: what are you going to do with it?

Mr. MANN. Mr. Chairman, may I refer to one other line of work, the storage of sweet potatoes? There are probably about 50,000,000 bushels of sweet potatoes stored in the South in earth banks. For the last two or three years we have been helping the growers in building storage houses for this product. There have been nearly 1,000 improved storage houses built for sweet potatoes by growers and cooperative associations and others in the South by which the losses are reduced to not more than 2 per cent as compared with nearly 50 per cent in earth banks. The growers are not in a position to build these houses without assistance. The houses are so constructed as to maintain a uniform temperature and so arranged that the sweet potatoes can be cured in them. The result of storage in these houses has been a reduction in the loss from spoilage from 50 per cent to about 2 per cent.

Mr. ANDERSON. That is, warm storage.

Mr. MANN. Yes, sir; warm storage. The temperature at which they are held is about 55°.

Mr. BYRNES. How do you help them?

Mr. MANN. By answering inquiries from individual growers and associations and business men who are interested in providing better storage houses for their potatoes, and so far as possible, by having one of our men talk with them. We send them plans and answer a great many inquiries by letter. We also make contracts with the State agricultural agencies.

In the Northwest and in the eastern apple districts in Virginia, West Virginia, and Georgia we have aided the growers in building a large number of apple storage houses.

Mr. ANDERSON. I suspect if you went out into the country you would find that these people were claiming a lot of credit for doing these things themselves?

Mr. MANN. They are accomplishing a great deal in improving conditions. There have been more than 100 storage houses of this kind built in the Northwest. These houses have to be insulated and properly ventilated. We have had an investigator working on that problem for about four years in the Northwest.

We propose to expend the increased funds, if granted, in an investigation of heater cars and in demonstrating methods of equipping the cars to reduce freezing losses. The railroads have developed no standard methods of preventing freezing, and the result is enormous loss due to freezing. The careful handling investigations of

fruits and vegetables should be continued and extended, the construction of storage houses for apples and other fruits and vegetables, and the work on refrigerator cars, in precooling, and in ocean transportation is very urgent. This increase will not enable the bureau to handle all these lines of work, as we feel they should be handled. For instance, we expect to have two or three men in the ocean transportation work, where we could very profitably use five or six men, because the ocean transportation work concerns the growers on the Pacific coast as well as those in the Middle West and on the Atlantic coast.

Mr. ANDERSON. You have gotten into a question that interests me a little. I think it is a good deal of a question whether it is desirable to start on this investigational work and spread it out over a large number of individual problems and continuing it for the next 20 years, or whether it is not better to adopt the other policy of trying to find what the real problem is with respect to something that is of economic significance and undertaking to solve that problem and getting through with it.

Mr. MANN. That is the policy we are trying to follow.

Mr. ANDERSON. It seems to me, as I read what you propose to do, that you are either looking a long way into the future or else spreading your money out pretty thin.

Mr. MANN. The work we have done on refrigerator cars might be taken as an illustration. The department has worked out an improved refrigerator car, but there still remains some further work to be done on that which will not compare in expense with the work which has already been done on that particular item. The work on the heater cars we expect to carry on in the same way and to concentrate on that until we have worked out the question of an improved heater car or heating equipment for refrigerator cars. We receive a great many calls for help on these different lines of work. They are all one related problem, that of getting the product from the producer to the consumer in sound, merchantable condition. We are concentrating on the particular items which are of the greatest importance.

I think, Mr. Chairman, that covers the principal items.

INCREASE IN ITEM.

Mr. ANDERSON. I notice in this statement which you have handed me as to how the increase will be used; that under the new employees you have three clerks, one at \$1,440 and two at \$1,200 each. Why do you need three clerks on this job?

Mr. MANN. We need to establish our field contacts in this work through our field offices. We have no field offices at the present time. We need an office in the South, at Atlanta, in connection with the sweet-potato industry and other lines of work in the South, including the fruits and vegetables in Florida. In that case we will need at least one clerk in the office. We need another office in the Northwest in connection with the apple and similar work there, for which we will need a clerk, and we are also short of clerks in our general work in connection with these activities which are centered in Washington. We need a field clerk in New York, where we would probably have the headquarters for the ocean-transportation work. So that explains the question of the increased clerical help.

Mr. ANDERSON. Have you rented quarters in these places where you have quarters?

Mr. MANN. As a rule, we have one office room, and possibly two, but the rental charges are rather nominal. I think we paid about \$40 a month for office rent in Atlanta in connection with the sweet-potato work.

Mr. BYRNES. Are you building up a Federal reserve system—decentralizing?

Mr. MANN. No, sir.

Mr. ANDERSON. We find a Federal reserve system in every project in this bill; two men are doing the same work with one man supervising the two, with a supervisor supervising the supervisor, and somebody in Washington supervising the supervisory supervisor, each supervising the other's supervisor.

Mr. MANN. The reason for having these field offices is so that our men can keep in touch with the people who need assistance and information which the bureau can give them.

Mr. BYRNES. If you put a man in Atlanta, a person in any other State would as soon write to Washington as to Atlanta?

Mr. MANN. Most of the correspondence in connection with the construction of sweet-potato storage houses has gone to Atlanta in the last two years.

Mr. ANDERSON. Have you an Atlanta office now which could be used for this work?

Mr. MANN. No, sir. There was an office in Atlanta when we were doing more of the sweet-potato work than at this time.

Mr. BYRNES. Where is the extension-work headquarters?

Mr. MANN. In Georgia?

Mr. BYRNES. Yes, sir.

Mr. MANN. At the State college, I presume, of course, there is extension work being done there.

Mr. BYRNES. But in the State of Georgia, I presume, just as in the State of South Carolina, where they have the Clemson Agricultural College, you have some place in the State?

Mr. MANN. Yes; it is located at the State college as in all of the other States.

Mr. BYRNES. Why not locate it there instead of establishing a new office?

Mr. MANN. Atlanta is much more central for a man who is carrying on work in South Carolina or Georgia or parts of Alabama.

In the sweet-potato storage work last year 200 of these houses [indicating] were built in the Southern States, which stored about 500,000 bushels.

Mr. ANDERSON. Are these commercial storehouses or individual storehouses?

Mr. MANN. They are both. They include the individual storehouse, usually of the smaller size built by the growers themselves, and the storehouse built by the growers and business men together, of larger capacity. That work cost us \$4,500. About 200 houses were built by the growers. The sweet-potato storage work, as a whole, from 1918 to 1920 resulted in the building of better storage houses to store about 4,000,000 bushels, the cost of that work being \$46,000 and the value of the products stored being over \$10,000,000.

Mr. ANDERSON. When you speak about sweet potatoes in Georgia, what do you mean?

Mr. MANN. The ordinary yams, or sweet potatoes.

GRAPE STORAGE IN CALIFORNIA.

A few years ago the grape growers of California were having a great deal of trouble in getting their grapes to market. There have been something like 24,000 cars of these grapes shipped during the past year. The department made a study of the methods of handling and packing the grapes so that they could be held in storage to lengthen the market season two months. That work has resulted in a grape-storage industry in California, and grapes are now available in the markets here as late as the middle of January and sometimes later. In 1920 there were 1,440 cars of these grapes shipped. That whole investigation cost us \$23,000 and it has returned to the growers \$6,800,000. Two years ago there was a shortage of redwood sawdust, which the department had found was the most suitable packing material for the purpose, and the growers called on the department again to find out whether some substitute could be used. Experiments were made with some other available materials and it was found that spruce from Oregon and from the California coast was a very satisfactory substitute. These materials can be used for this purpose, and, fortunately, there is an unlimited quantity of spruce available. In 1918 one car of these grapes was shipped; in 1919 146 cars were shipped; and last fall 463 cars were shipped. The cost of that work was about \$4,900, and the value of the grapes that have been shipped amounts to \$968,000, returned to the industry.

In conclusion, I have tried to outline the related lines of work under this item, and how we propose to use the increase carried in the estimates.

TRANSPORTATION OF PERISHABLE FARM PRODUCTS BY REFRIGERATING CARS.

STATEMENT OF MR. R. S. FRENCH, GENERAL MANAGER OF THE NATIONAL LEAGUE OF COMMISSION MERCHANTS OF THE UNITED STATES.

Mr. FRENCH. Mr. Chairman and gentlemen of the committee, I should like to explain my representation to show the the scope of it in this particular industry. Aside from representing the National League of Commission Merchants of the United States, I represent the International Apple Shippers' Association and the Western Fruit Jobbers' Association of America. These three organizations appear under a joint council in handling national problems in order to avoid duplication of effort and to expedite matters.

There may be a question in the minds of some of the members of the committee why two of the organizations I represent are not mentioned in the estimate as approving the work that is going on. I am quite sure that was an oversight, because these three organizations have been working in a very close cooperative way in all of the constructive policies of the Bureau of Markets.

As you will recall, last year when this question came up I talked with you, and at that time you explained how appreciative and mind-

ful of the value of the service which was rendered by the department under this particular item you were, and at which time there was an added amount made available by an amendment to the act of \$20,000 over what the bureau then had for this particular project to carry forward this work.

I am here to-day just simply to add the hope that this committee will look with favor upon this request for additional money to carry forward and extend this investigation and work of demonstration to what we consider a real economical accomplishment. These organizations which I represent handle during the year, I might say, over 500,000 refrigerator cars of fruits and vegetables. They are the wholesale dealers, jobbers, and distributors of these commodities. Mr. Phillips, Mr. Tidwell, and I represent these organizations as secretaries and have made a life study of the needs of the industry as regards transportation. I myself was practically raised in the refrigerator-car game with the Armour people.

I am appreciative of what the Bureau of Markets has done in establishing, as near as possible, a standard refrigerator car, which had the approval of the Railroad Administration and is being adopted by some of the carriers in the building program that the carriers are now considering as authorized under the transportation act and for which money has been provided out of the revolving fund. We had largely to do with Chairmen Cummins and Esch, as well as the Interstate Commerce Commission, in pointing out to them the needs of this industry, the need for efficient transportation facilities, the losses that have ensued resulting from the lack of such facilities. Of course, the facilities for storage necessary to the transit privilege in certain of these commodities must be included.

I want to leave with the committee a brief that we submitted last May to these gentlemen and to the commission. The facts in it hold good to-day, because there has been no material change in this situation.

In the existing equipment throughout the United States as owned by the railroads and the private car lines the percentage of deficient equipment is enormous. The fact that during the year 1919 there were 1,500,000 carloads of perishable commodities, of which 1,079 were fruits and vegetables, shipped in an available car supply of 91,000 cars is a performance that I do not believe could ever be repeated, for the reason that there has been no building to keep pace with the development, and very many of these cars have become so deficient that they can not function under the increased loads which, as a matter of patriotism and desire to feed the people of this country, the shippers responded so splendidly to in loading as heavily as possible, consistent with the safety of the commodity. That made possible the enormous movement with the limited number of cars available.

I think this is all pertinent to this question, and the work these men are doing is bringing up to the highest possible standard the equipment of the railroads for refrigerator and heater service. The standard for refrigerator cars created by the department has met with the approval of the carriers and is being adopted. They are now working on the heater car, which is just as essential. The losses which have resulted in the Northwest and over other sections of the country where the elements are involved from lack of proper pro-

protective service of these commodities are enormous. Those losses are set forth in this brief, particularly on pages 7 and 8. For the protective service which the railroads from the Northwest are furnishing they charge an added rate in the way of insurance. Under the present arrangement that service is only available to the Mississippi River or Chicago.

Mr. ANDERSON. What do you mean by only available to Chicago?

Mr. FRENCH. I mean from the Northwest on fruits and vegetables the tariffs only provide that service up to Chicago. If a man takes his car through to New York he must take the risk of running through quite extreme weather without heat in the cars. Those heaters are taken out at Chicago, and the losses have been enormous from that point to the North and South Atlantic ports.

Mr. RUBEY. They are not carried farther than that?

Mr. FRENCH. No, sir. That is what we are trying to correct. We tried to have that service extended east of the river, but the charges were prohibitive. The proposed charge for a 1,000-mile haul east of Chicago to New England was greater than their charge west of the river for 2,000 miles—

Mr. RUBEY (interposing). Have you ever taken that matter up with the Interstate Commerce Commission?

Mr. FRENCH. Yes, sir. We have now under active consideration getting down to a reasonable through-route basis on which the shipper could use that service. That involves this: The building by the railroads of a properly equipped heater car that would perform the service rather than to depend upon any refrigerator cars which are now being used and equipped with stoves.

Then comes in the question of the wonderful development of the apple crop in the Northwest. It is conservatively estimated that the increase in the next 10 years will be 10 per cent at least per year. That enormous crop is harvested in three months, which it takes nine months to consume. That means, of necessity, having storage facilities, cold and common storage facilities. We have, however, transit privilege which will permit these apples to move from the harvesting point into storage as near the point of distribution as possible and reshipped at the through rate. The transit privilege was originally 5 cents per hundred, but under the recent increase has advanced to 7 cents. That is a wonderful facility to the successful handling of this enormous crop. It is not only a food conservation measure, it is an equipment conservation measure. This scientific department—the Department of Agriculture—is better qualified to recommend to the builders of storages the character of storage that should be built that will properly take care of these products.

MARINE TRANSPORTATION.

If you will recall, we were primarily concerned last year in the extension of this work to overseas. As Mr. Mann has stated, it is conservatively estimated that 25 per cent was lost on export business of fruits across the water. The department has recognized the importance of studying it, and they have already started under their limited appropriation and in a limited way by putting one man on the service, and last month he went across with a consignment. We have not the result of that yet. I feel that it is as important to

standardize the method of protection of these commodities in the ocean-going vessels as it is in railway equipment.

We hope very much that this committee will give favorable consideration to the estimate as asked for which will enable the department to continue their investigation.

Mr. ANDERSON. Do these products go over under refrigeration?

Mr. FRENCH. They have to, Mr. Chairman. Large quantities have to go over under refrigeration. There are some commodities that will stand the open space in the hold of the ship without refrigeration, but that is exceptional.

Mr. ANDERSON. Is it not rather a strange thing that millions of dollars are spent on ships and inevitably, as I suppose, in building refrigeration space in them, without knowing anything about how to do it?

Mr. FRENCH. Well, I would say that some lack the proper information, and that is what we are trying to do—educate them to get the maximum degree of protection both in their ships and in the cars.

Mr. BYRNES. Is it not a fact that in building ships, unless a ship is given over to this particular line of business they would hesitate to provide the refrigeration space, because they would just lose so much space?

Mr. FRENCH. There are very few of the trans-Atlantic ships that are given over entirely to refrigeration, except the ships that ply from New Zealand, where they bring meats of all kinds.

Mr. BYRNES. Is not that one reason why they are refraining from doing it—that they would lose so much cargo space?

Mr. FRENCH. That is true. They are now allocating certain space for this particular traffic, because it is increasing so in volume. Great Britain, Australia, and other countries are at time of short production dependent on this country for these apples and other fruits, and we want to get them over there safely.

Mr. BYRNES. But on the return trip is it not a dead loss?

Mr. FRENCH. No, sir. This space can and is used for return cargo, and their rates are fully compensatory.

Mr. BYRNES. What excuse do the railroads give for the prohibitive rate east of the Mississippi?

Mr. FRENCH. Their real reason was the abnormal cost of material going into the equipping of the cars. For instance, three years ago when we were contemplating this move they claimed that they could buy stoves for \$35 for which they now have to pay \$75, the cost of labor and all the other costs they claim have appreciated.

Mr. RUBEX. There is the service up to Chicago, and then they take the stoves out?

Mr. FRENCH. Yes, sir.

Mr. RUBEX. It would not be very expensive to replace the stoves?

Mr. FRENCH. What the Erie proposed was to put their stoves in the cars at Chicago and bring them through. What we are after is to get the carriers to perform the through service—point of origin to destination.

I will not go into the details, but I want to leave this document for you gentlemen to look over, because it sets forth very fully the needs of the perishable industry as to proper equipment. I might say that as a result of putting before the commission and before Mr. Esch and Senator Cummins this exhaustive brief, and other exhaustive

briefs, we feel that we influenced the commission very largely in setting aside \$75,000,000 primarily for the purpose of building 20,000 refrigerator cars; 20,000 cars was the estimate we made, and it was concurred in by the railroad executives last year; but just as soon as they got the money, or the opportunity to borrow the money, they tried to cut it to 8,000 cars, but through our persistence we have gotten them back now to where loans have been made for building 14,000 cars. We hope that in the near future we will get the full complement of 20,000 cars; but even with that it does not give us sufficient equipment to handle the constantly increasing crops of the country with safety. We believe it is an economical measure and that it is a food-conservation measure. It is one that will help everybody concerned; that is, the consumer, the producer, and the transportation companies.

I have in my office a claim department which handles claims against carriers for loss and damage, and just the little item during the war from freezing in cars that were delayed amounted to \$120,000 in claims for loss and damage. It is true that I recovered of that amount \$70,000 and paid it to those men; but there was a further loss involved that they could not overcome, and there is also involved in it a waste that can not be recovered. Some of the courts have held that carriers are not liable for the failure to furnish cars to move products. There are varying opinions in that regard. What we want to do is to have this equipment furnished and to encourage the carriers to meet the needs of the traffic. We believe that the Department of Agriculture, through the Bureau of Markets, can bring this about if it is encouraged properly financially.

I thank you very much.

Mr. ANDERSON. We are very much obliged to you, Mr. French.

INFORMATION SERVICES.

Mr. LIVINGSTON. The next item, No. 76, is to be eliminated if the estimates as submitted are approved, because it is included in another item entitled, "Market information service." The same comment will apply to item No. 77. In item No. 78 we have combined all of the so called market-news services of the bureau. I might say that the reason for the consolidation is simply one of increased efficiency in administration. We are obliged to lease telegraph wires and make various other expenditures which are paid for frequently from two or three appropriations under the present system. Under this scheme we will be able to avoid considerable bookkeeping, and it will facilitate the general bookkeeping features of the market-information service. I would like to have Mr. Wheeler explain this item somewhat in detail.

MARKET NEWS SERVICE.

Mr. WHEELER. The market information service, as organized, includes various services which have been under way for several years. It includes the market news service for fruits and vegetables, which was tried experimentally in 1915 and was authorized in 1916; the market news service on live stock and meats; the market news service on dairy and poultry products, and the market news service on

hay, feed, and seed. These four services are now grouped together in one item, with an apparent increase in the total of \$359,840, but if you allow for \$35,000 transferred from another item, the increase is only \$324,840. As stated in the outline I have handed to you, the bureau originated and developed a market-news service for agricultural products for the public. Never before in the history of the department has there been such a demand for accurate, timely, and comprehensive information on the markets for agricultural commodities. The need for authentic-market information at the present time has arisen because of the peculiar conditions which exist at present, due to a decline in the prices of most agricultural products, and to other incidental factors in the marketing of farm products. The Bureau of Markets is called upon repeatedly for information by all kinds of organizations and institutions concerned with production and distribution.

The farmers' organizations, National, State, and local, are continually calling upon us for assistance in giving them statistical and current market information, both domestic and foreign, that will aid them in marketing their products. It is generally recognized to-day that this kind of service will enable the farmer, the small dealers, and the large dealer as well, to market their products more intelligently than they could without having this information. It is recognized that the farmer should have information that is equal to that possessed by the other parties to the transaction.

Before the Bureau of Markets entered the field the small dealer and the farmer depended upon various miscellaneous sources for all their information covering the marketing of their products, and how accurate and comprehensive such information was is a matter of conjecture. Perhaps not all of the information that has been given out heretofore, or before the department established these market news services, was biased, but it is well known that it was at least not disinterested, and it is very apparent, I think, to everyone to-day that the furnishing to all the parties concerned in the transaction of the fullest kind of information relative to supply and demand, prices, movement, production, and all other factors which enter into marketing should be a public function.

It is the intention of the Bureau of Markets to-day in the establishment and in the conduct of the market news service to correct the practices which have been in vogue in the past and to establish a service which will be of assistance to the farmers and to the dealers as well. In handling the matter most of the work is done on a commodity basis. It is necessary to handle the live-stock service more or less separately from the fruit and vegetable service, from the dairy products, and from hay, feeds, and seed, because we are dealing with a different class of people in each case. However, we use the same leased telegraph wires, and as far as possible we combine our offices. We have to deal with the different institutions that handle those commodities, so that our branch offices in many cases are separated.

The market news service for fruits and vegetables is the oldest. At the point of its highest development this market news service operated 32 branch offices in large terminal markets, and now operates 14. It reported on 30 crops, and now reports on 15. It operated 91 temporary field offices, and expects to operate 42 this year. At the

present time this service for fruit and vegetables is practically upon a prewar basis. As a matter of fact, it is down to where we can say that it is on a prewar basis so far as the service that is rendered is concerned. The maximum development was during the war. That was due to the increased demand then for that kind of service.

Mr. ANDERSON. Referring to this market news service for fruit and vegetables, is that a telegraphic service?

Mr. WHEELER. Yes, sir; it is a telegraphic service.

Mr. ANDERSON. What is the purpose of it?

Mr. WHEELER. The purpose of the service on fruits and vegetables is to furnish the producers of fruits and vegetables and the distributing agencies with authentic information which will enable them to market their commodities efficiently and economically, to prevent waste, to prevent gluts in the market, to show the movement of car-lot shipments, and to give such other information in regard to fruits and vegetables as will enable them to carry on their marketing operations in the most efficient manner.

METHODS OF DISTRIBUTING INFORMATION.

Mr. ANDERSON. How do you get that information to them?

Mr. WHEELER. The information is distributed to them from the market and field stations. There are now 14 market stations, whereas there were 30 formerly, and there are now 42 stations at production points, whereas formerly there were 91. The latter are temporary stations, operated during the growing season for special products like cantaloupes, strawberries, peaches, and fresh fruits and vegetables of a perishable character.

Mr. BYRNES. How do you furnish that information to the grower?

Mr. WHEELER. The grower is furnished with mimeograph reports from the field offices, and the reports are furnished to the newspapers in the particular locality concerned. Anyone who is sufficiently interested may apply for telegraphic reports.

Mr. BYRNES. Do you keep those reports up to date?

Mr. WHEELER. Yes, sir.

Mr. BYRNES. If you make up mimeographed reports covering the condition of the market, by the time they are received by the grower the condition might change?

Mr. WHEELER. Those reports are sent out daily. At the producing points demands come into the office for immediate reports, and these are furnished as soon as available. If those interested desire to make arrangements to receive the reports immediately, the reports are furnished to them by telephone, telegraph, or on-call at the office.

Mr. ANDERSON. What arrangement would the grower have to make?

Mr. WHEELER. If he wants a telegraphic report, he can make an arrangement to have the telegraphic report sent to him, and he pays the charge for the telegraph service.

Mr. BYRNES. He can telephone in for the reports?

Mr. WHEELER. Yes, sir.

Mr. ANDERSON. To what extent is that done?

Mr. SHERMAN. A large distribution from the temporary field stations is by telephone. Usually all of the large shippers handling the commodity or commodities being reported within a radius of, say,

40 miles of where we have our temporary station will have an arrangement with the field office by which the morning market report, which comes in by 1 o'clock every day, is furnished to them. Our telegraphic market reports contain a statement of the morning's arrivals and sales at the principal large markets of the country and the car-lot shipments for the United States during the preceding 24 hours. All of that information is received by telegraph at the local field station at the latest by 2 o'clock in the afternoon. Some of it is received by 12 o'clock, and some by 1 o'clock, and some by 2 o'clock. The message is received in the form of a code telegram, and it is immediately translated. It is then typewritten on a stencil and mimeograph copies are run off and posted immediately in the mail. The reports are available to everybody at the local post office on the same day and to everybody on the R. F. D. route the next morning, so that the oldest information received is not over 24 hours old.

Mr. ANDERSON. That is to say, your agency at the marketing end gets this information by 2 o'clock as to the market conditions?

Mr. SHERMAN. It is handled in this way: Our men at Boston, Philadelphia, New York, and other centers report to us over our leased wire. They have to assemble and make up commodity telegraphic reports, and we combine them. That report goes out over the Western Union. We will say that it deals with strawberries and that it goes to Hammond, La., and it is a report on the principal markets for that morning. If that information is assembled in Washington and is transmitted to Hammond by wire, the report will be there at the latest by 1 o'clock in the afternoon.

Mr. ANDERSON. How will they use that information?

Mr. SHERMAN. That information is telegraphed to every shipping association, all up and down the railroad, in that particular district. The strawberries from that district would be shipped over the Illinois Central.

Mr. ANDERSON. Is that telegram sent at your expense or theirs?

Mr. SHERMAN. The local telegram is sent at their expense. Our expense is for the maintenance of the office, and for materials and supplies for the issuance of the reports. Reports received by telegram or through telephone service are at their expense. If there should be a shipper in the district within reach of telegraph service, and if he wanted it furnished by telegraph, he is given a special message from Hammond over the Western Union giving him any part of the daily market report that he is willing to pay the charges on.

Mr. ANDERSON. How extensively is that done?

Mr. SHERMAN. In some localities there are several of those local telegrams sent out; but usually the man who pays for the telegram knows that he can get it as cheaply from Kansas City or St. Louis, and he may get it sooner in that way. Therefore most of the local telegraphic reports are from local points. Our reports are also quite extensively released through the Western Union commercial news dispatch department.

AMOUNT OF TELEGRAPHING.

Mr. ANDERSON. I want to know how much of this telegraphing business is done. I do not care whether it is over a leased wire or not; but what I am trying to get at is to ascertain what these people

think of the service. If they are willing to pay for telegraphic reports then that is an indication that they think it is worth something.

Mr. SHERMAN. I can not tell you what that bill amounts to. That would be a little different bookkeeping from any we have done. It would depend a great deal upon the geography of the country as to whether it is necessary to use telegraph lines in order to reach a shipping point or not. Of course, we always locate at the heaviest shipping point in the general territory concerned.

Mr. BYRNES. Really, most of it is done by telephone, is it not?

Mr. SHERMAN. I should say that most of the distribution from the temporary field stations is done by telephone and mimeographed reports.

Mr. BYRNES. Is there any way by which you could give the information that the chairman asked for or how much of it is done by telegraph?

Mr. SHERMAN. I do not see how we could do that.

Mr. BYRNES. You would know the number of men who have authorized you to telegraph them at their expense.

Mr. SHERMAN. We have exact reports telling how many people we serve at every point, and by what means we serve them. We can show how many are on our mailing list and how many are reached by telegraph.

Mr. ANDERSON. The thing I am trying to get at is this: When you come here for \$176,000 for telegraphic market-news service, that market-news service has got to be worth something. It must be worth something to the people who get it or it is not worth the money you propose to expend on it.

Mr. WHEELER. At many of the field offices the demands over the phone are so great that the first thing that is done, in order to save time, is to make up a list of those agencies that want that information immediately. A list is prepared of all of the associations and individuals that have requested the information immediately. A clerk in the office sits down and takes a half hour or more in calling up those interested and in giving each the particular information he desires; and by that means a large number are furnished rapidly with this telephone information. I have been in offices where they did this; whereas, if each had been obliged to wait for all of it, there would have been considerable delay, because it would take several hours' time on the part of the clerks to answer calls and give the information.

Mr. BYRNES. So far as this mimeograph service is concerned, I do not think that can be of much benefit. If the information is so little desired that they will wait to receive a letter in the mail next day, then they do not desire it very much.

Mr. WHEELER. We are reducing our mimeograph reports to a minimum and we are sending fewer out this year than before.

Mr. BYRNES. You were talking about market information on perishable fruits and vegetables, and you stated that it was the policy to furnish the information to shippers up and down the railroad within a radius of 30 or 40 miles of your field station. Now, if you took your mimeographed reports and mailed them out, it would

depend entirely upon the mail facilities as to what time the next day they would be received. If a man has the mimeograph report sent to him by mail, it would be an indication that he was not very much interested in the report, because if the report is worth having at all he should have it immediately.

Mr. RUBEN. If he can get the report from day to day during the season, that will give him some idea of the condition of the market. While he may not be ready to market them, he may be getting ready to market within a week or 10 days. If he gets the reports daily he can judge the future somewhat from the information that he is getting from day to day.

Mr. WHEELER. It keeps a continual motion picture before him. If he has the reports for a few weeks before he markets his products, or receives them all during the marketing season, it serves to keep him within a few hours of the actual market. The reports serve in that way a very definite purpose. Of course, the mimeograph reports do not take the place of the telegraphic reports.

Mr. BYRNES. I suppose that a shipper might ask for the mimeograph reports until he was about ready to ship, and that he would then ask for telegraphic reports or reports over the telephone. Is that the idea?

Mr. WHEELER. He has the privilege of doing that.

Mr. SHERMAN. The daily reports serve a great purpose in giving a man a basis upon which to check up his returns. That is what they want the daily reports for. The great bulk of the growers are not shipping individually, but the great bulk of them are shipping under some sort of organization, or else they are selling f. o. b. They want the daily market reports, however, to check up their returns by, and from which to judge whether the offers made to them are reasonable or not.

Mr. BYRNES. Why are they shipping f. o. b.?

Mr. SHERMAN. That is what every grower tries to do.

Mr. BYRNES. He is afraid to take chances?

Mr. SHERMAN. This year they were compelled to take chances, because the buyers would not put up money on stuff shipped f. o. b.

Mr. RUBEN. Although he may have marketed his produce the day before, it is interesting for him to know what the market was in order to check up and see if he has the right returns from his consignment.

Mr. SHERMAN. When it comes to marketing Irish potatoes, then the three-times-a-week service by mimeographed reports answers every purpose at this time of the year. We took that up with our lists in Aroostook County, Me., and asked them how much more valuable a daily report would be than a three-times-a-week report. A majority of them said that under the conditions now existing, the rush market season being over, the three-times-a-week report would answer every purpose. However, when it comes to such things as strawberries and watermelons you have a different situation.

Mr. WHEELER. There is no question about the value of the service at the field points. There are hundreds of letters on file at the bureau as to the value of the service. Each letter, instead of coming from individual producers, usually represents an association composed of a number of producers.

That is true because it is the representative of the association that is looking after the marketing interests of the producers. Through the lack of appropriation, it became necessary to eliminate a large number of those stations. There was a reduction from 91 temporary field officers down to 42 this year, and there have been a great many demands made for the reinstatement of those temporary field stations. Many of them were at western and southern points.

Mr. ANDERSON. Do the large shipping associations maintain their own news service, or do they have leased wires?

Mr. WHEELER. Only a few of them are able to maintain any extensive market news service. Most of them depend upon the public service, because it is almost impossible for any private service to get the information that we are able to get from the railroads. In fact, the railroads can not divulge information as to receipts and shipments to private agencies. We get that information from approximately 300 railroad superintendents. That information comes in every day to our office and is sent out to the field offices, showing the car-lot shipments and the receipts.

Mr. BYRNES. At what time in the day do they send you that information?

Mr. WHEELER. It comes by midnight for the day before, and it is assembled in the morning. The information represents a 24-hour period up to midnight for the day before. It is collected at our office the next morning, so that all of our field offices have that information the next morning to be incorporated in their mimeograph and telegraphic reports.

Mr. SHERMAN. Every division superintendent sends us that report at the close of his day's business. In some cases it is at 9 o'clock at night and in some cases it is at 2 o'clock in the morning. It depends upon when they change their shift. That is done because if we do not get the report at the same time the shift goes off, we may not get it accurately. It is not strictly up to midnight, but it represents the shipments for 24 hours. It gives the business on each particular division, and inasmuch as there is a difference of three hours in time between the East and the West, that is the best we can do.

Mr. BYRNES. You do not have to pay for that service from the railroads?

Mr. SHERMAN. No, sir; we do not have to pay for that.

Mr. BYRNES. They prepare the data and send it to you?

Mr. SHERMAN. Yes, sir; and we pay them nothing for that service.

That is really the most valuable basis for a report on market conditions, and a picture of the movement of products could not be obtained in any other way. That is the first thing that competitive country shipping districts want to know. The first thing that the shippers at Crystal Springs, Miss., want to know is how much was moved out of the Jacksonville district the day before. They have got to keep themselves posted on the movements. They can guess at what the prices will be if you keep them informed as to the movements.

Mr. RUBEX. Have you any statistics to show how many people you serve?

Mr. SHERMAN. Yes, sir. We hesitate to tell the committee how many people we serve, and we hesitate to tell you how much paper it requires to serve them. We do not serve anybody except upon a

written request. We have no general or miscellaneous distribution, but every man who receives the service makes a written request for the service, stating in his request the crops in which he is interested, for how many months he wants the service, etc. Then, the mailing list is circularized periodically, and every name that does not reply is cut off the list. We require them to give us repeated affirmations to the effect that they want the service, and that is done at periods of three or four months. Even with that system the bulletins we issue every year would make a stack several times as high as the Washington monument.

Mr. WHEELER. We do not mean by that blanket requests, containing long lists of names sent in by an association. If a list like that is sent in each name is circularized before entering on mailing list. All of the names are circularized every three to eight months. Even with that system, the number is only slightly reduced each time, and then it climbs again usually ahead of the former number.

Mr. SHERMAN. Here is a telegram received from the Colorado Potato Shippers' Association:

In behalf of the members of this association we protest reducing daily market reports from Greeley to thrice-weekly, as information furnished will be of little or no value unless received daily, especially with present market conditions. We earnestly request your reconsideration and continued daily issue.

I have another one from the Greeley Chamber of Commerce to the same effect:

We vigorously protest suspension daily potato market report. Earnestly request continuation present service. If necessary to economize make terminal market station service thrice weekly, field stations daily where daily reports are most needed, particularly present time.

Mr. WHEELER. It is the general policy of the bureau, as stated before, to try to reduce our mimeograph reports to the absolute minimum. It is recognized that a mimeograph report is not in all cases the most efficient way to get out market information, because if we had to cover all the people that should be served by the service with mimeograph reports it would be out of the question for the bureau to do it. It would take millions of reports daily to do that. We use the mimeograph reports where they are requested and where they are demanded, but we do try to get our reports into the daily papers and into other papers in summarized form, so that they have a much wider distribution than the mimeograph reports. At many of our field-station points the daily papers are using the reports regularly. It is not always the custom to give full credit to those reports, but wherever reports are being issued you will find that the reports in the daily papers are Government reports that are issued at those markets. Of course, there are many places where reports are not issued and where the reports in the daily papers are obtained from other sources, but we try in every way possible to get our reports out to those who desire and need them, both through the papers and the commercial telegraph news services.

Mr. LIVINGSTON. May I say that we have numerous requests from shippers' associations and others to permit them to pay for this service in whole or in part, but which offers we have consistently refused to accept because we felt the committee and the Congress had said how much market news service they wanted the Government to do by the size of the appropriation they had given us; on the other

hand, we do not desire to become tied up or involved through financial cooperation with interested parties in carrying on our market news service. We do not desire to have our men located at a shipping point or at a receiving point under any obligation to either the shipper or receiver, because if there is anything in the market news service it is to be found in its accuracy and disinterestedness, so far as its collection and dissemination is concerned. For those two reasons we have in every case refused to accept the offers of these associations and others to help finance the market news service. In the way of extending our present system, very recently we had an urgent request from an organization of shippers in the Lower Rio Grande Valley of Texas, and that is only one illustration of a great number of them coming in during the course of the year. The grape shippers along Lake Erie and in the New York districts have asked to do the same thing, but we have in every case, as I say, refused to enter into that cooperative arrangement.

Mr. RUBEY. You could not afford to charge some and give it free to others.

Mr. LIVINGSTON. That is another feature of it; yes, sir.

FEASIBILITY OF CHARGING FOR MARKET NEWS SERVICE.

Mr. ANDERSON. I have sometimes wondered why as expensive a service as this might not well be put on a fee basis.

Mr. WHEELER. It would be difficult to serve the large number of people that we wish to serve if it were placed on a fee basis. As I said, the general reports gotten out through the daily papers and through the market sheets that are gotten out in the markets, extend the service far beyond any extension that we could effect by our mimeograph reports directly. I think the indirect effect is greater than the direct.

Mr. ANDERSON. I think that is true, but specifically this is a service for interested people—shippers' associations and individuals—and so far as this telegraphic service is concerned I am not so sure it might not well be put on a fee basis.

Mr. LIVINGSTON. It would be rather difficult to decide on a schedule of fees which would be fair to everybody concerned.

Mr. ANDERSON. You are never deterred by any difficulty; I know that.

Mr. LIVINGSTON. I did not understand that comment.

Mr. ANDERSON. I say, I am sure you are not deterred by any difficulty.

Mr. LIVINGSTON. But there are some difficulties large enough to cause us to stop and hesitate a little bit, at least. But I want to point out that a good bit of the expense connected with this telegraphic news service is not alone for distribution, but for collection: we can not disseminate information unless we collect it, and it is difficult to prorate the cost.

Mr. ANDERSON. Of course, you can not disseminate information unless you get it, but it is a service which you render, so far as its immediate availability is concerned, to a relatively small number of people. Of course, the general dissemination of information that has practically become pure information, almost statistical information, can not be put on a fee basis, but when you are disseminating

information on a 24 or 48 hour basis, as is the case with the market news service—although I do not commit myself to that view of it—it does seem to me, particularly when the costs run as high as they do here, the telegraph bill amounting to \$176,000, that the possibility of putting it on a fee basis is worthy of consideration.

Mr. LIVINGSTON. I think the bureau is very willing to consider that question further: in fact, we have considered it since you brought it up at a hearing a year or two ago, but we have never yet been able to work out a basis of charges that we were satisfied with, but that does not say it can not be done. I think the question is one well worth considering, but it will take some time to put it on that basis. Even in that event it would be necessary, it seems to me, to have what might be called an overhead expense fund that could not properly be charged as a fee to the man who receives the individual report.

Mr. ANDERSON. I have not undertaken to work it out in my own mind: it has simply been a notion I have had that a service as expensive as this, which is primarily intended to promote the marketing interests of particular classes of people at some particular time, might well be put on a fee basis.

Mr. LIVINGSTON. In respect to the live-stock reports, the dairy reports, and, to a certain extent, the fruits and vegetable reports, the greatest benefit that comes from our reporting service, in my own opinion, at least, is the indirect service rather than the direct service. It puts the market reports of the country on a substantial basis and the newspapers that use these reports are using accurate reports.

Mr. WHEELER. Our service is more or less on a cooperative basis. We collect a large part of our information from the same people who are going to be benefited by receiving the information. So it is in many ways, really a clearing house. We collect information from the local dealers and producers and the summarized information is furnished to all of them and is also wired to other sections of the country. We give them in return similar information that is collected from similar sources at other points. It would be rather embarrassing at times to charge a man for the service when we are asking him to cooperate with us by furnishing information and in extending the service to others. We will give careful consideration to that, but there are many difficulties involved which ought to be mentioned. Are there any other points in connection with fruits and vegetables?

Mr. ANDERSON. I understand you discontinued your service last year west of Chicago on fruits and vegetables: is that correct?

Mr. WHEELER. The leased wire service was discontinued west of Minneapolis and west of Omaha and Kansas City.

Mr. ANDERSON. Do you expect to reestablish that under this estimate?

Mr. WHEELER. The estimate contemplates opening a joint office on live stock and fruits and vegetables at Fort Worth, with leased wire connections. That is the only addition. Then we will add a number of temporary field stations, but we can not say the exact number. There might be 10 or a dozen additional; we will increase that number as much as we can with the appropriation. There are many local conditions which would have to be taken into con-

sideration. But the estimates do not contemplate the extension of our leased wire and telegraph service to the Pacific coast; we need that extension, but the estimates do not include it.

INCREASE IN TELEGRAPH EXPENSES.

Mr. ANDERSON. Your note indicates a very large increase in telegraphic expense. Does that simply mean an increase on the basis of your present service or does that represent an increase due to added activities?

Mr. WHEELER. The leased wires have been operated during the war on a special war rate of one-half. The American Telephone & Telegraph Co. made a one-half rate at the opening of the war to all Government agencies. At that time the regular rate was \$20 a mile, and half that rate brought it down to \$10. At the time the Government took over the telegraph services a 20 per cent increase was granted, which raised the regular rate to \$24, and one-half of that rate would be \$12, and \$12 a mile is what we are paying at the present time on our approximately 4,700 miles of leased wires. As soon as peace is declared, or, at least, by July 1, 1921, the company has notified us that the rate will be reinstated at the regular rate of \$24, which will exactly double our expense for leased wires on the present mileage, and on new mileage even now is added the full rate of \$24 a mile; so our increased estimate for leased wires is based upon two things. One is the increased rate on present mileage, and the other is the extension to Fort Worth and to Sioux City—to Fort Worth from Kansas City, and to Sioux City from Omaha. We have not asked in the estimates for an extension to the Pacific coast, from Kansas City to Los Angeles, San Francisco, Portland, and Spokane, which were included in our leased-wire services at their maximum development. You will recall that during the war we had up to over 17,000 miles of leased wires, but at the present time we have less than 5,000 miles. I can show you by a map a picture of the leased wires.

Mr. ANDERSON. I think I have a pretty good idea of the leased-wire business in my head.

Mr. WHEELER. The orange-colored lines indicate the leased wires, which are used now solely for live-stock reports; the green lines show the leased wires that are used in fruits and vegetables. You will notice that the live-stock wire goes from Washington to Chicago, St. Louis, Kansas City, and Omaha; from Washington to Boston we have leased wires used by the combined services, fruits and vegetables, dairy products and live stock, as shown by the alternate lines of orange and green; from Chicago to Minneapolis the wires are used by the combined services; there are wires used by the fruit and vegetable service to Rochester, N. Y., and from Washington to Cleveland, Detroit, and Chicago, and from Washington to Cincinnati, St. Louis, Kansas City, and Omaha. The alternate white and black lines indicate extensions requested in the estimates from Kansas City to Fort Worth and from Omaha to Sioux City. The additional extensions which are really needed and have been asked for by many organizations in various parts of the country would include those from Washington to Atlanta, Jacksonville, and New Orleans in the Southeast, and from Kansas City to Salt Lake City, Los Angeles, San Francisco, Portland, and Spokane in the West. But remember that these are not

included in the estimates and the amount of the present estimates would not include those extensions. We do not see how it would be possible to include at the contemplated cost of the leased wires to any of these points from our present estimates. The cost of leased wires from Kansas City to the Pacific coast would probably be \$120,000; that would probably be the cost of operating the wires and the offices at those points on fruits and vegetables.

Mr. ANDERSON. Would you have to operate over leased wires?

Mr. WHEELER. It would practically be necessary to operate over leased wires. As we are operating to-day the country is just about cut in half. The eastern half of the country has most of the service, while the western half of the country is entirely without the leased-wire service. To attempt to do this work over commercial wires would be very unsatisfactory, because we can not get the speed and the service we need to handle the field stations with the commercial-wire service. With offices formerly established at 19 markets, and now reduced to 8, current information is made available daily to producers, members of the trade, and others relative to market conditions and prices of wholesale dressed meats in the meat-consuming centers and of live stock to producers and live-stock interests in the live-stock centers of the West. This information is recognized as originating from the only unbiased agency in the country and is given nation-wide distribution by all leading market news distributing agencies.

Mr. ANDERSON. We had a lot of these commission men before the Agricultural Committee on the packer bill last year, and they were unanimous in saying that your service was not any good.

Mr. RUBEY. I wanted to ask him whether he could not get his market quotations on cattle, beef, and one thing and another, from the packers two or three days ahead and send them out so that the farmers would know when to ship cattle?

Mr. WHEELER. Before our service was in effect the early morning reports that went out apparently were dictated by a man before he got out of bed in the morning and before he knew anything about the market. But he had to get out a market report, so he resorted to guesswork and conditions the day before. We have had complaints coming to us from producers and dealers to the effect that we do not get out the reports early enough, saying they used to get them earlier before we started our service, but we have not attempted to do any prognosticating in the morning before the market was actually open, so that our reports are based on actual conditions in the markets and are gotten out as rapidly as they can possibly be gotten out.

Mr. ANDERSON. I understand that your reports are based upon the actual sales that take place in the morning at the opening of the market.

Mr. WHEELER. The actual sales, and all the information we have on the receipts; it is all actual information; there is nothing conjectured and no anticipated prices or conditions. Mr. Burmeister, can you give any additional information as to the getting out of these reports?

Mr. BURMEISTER. Our men do not attempt to issue any quotations until they can get information on actual sales, and there is no trading in the cattle market to speak of before 10 o'clock; in the hog

market the first sales are around 8 o'clock, seldom any sooner than that, and we try to put a message on the wire by 8.15 as to the opening hog prices, and that is the first information we can get as to prices at Chicago.

Mr. ANDERSON. Where does that information go?

Mr. BURMEISTER. This 8.15 message is turned over to the commercial telegraph companies to be flashed to all of their subscribers. It is the first message on prices that goes out; it is turned over to the commercial telegraph companies that give out what they call the C. N. D.—commercial news dispatch—report. We also send it over our own leased wires to the places where we maintain offices and post the information on the bulletin boards in the exchanges at those markets.

Mr. ANDERSON. What is this C. N. D. service?

Mr. BURMEISTER. It is the service which the commercial telegraph companies started years ago, a service whereby they furnish market information to shippers, exchanges, and boards of trade. They furnish three wires a day for a fixed charge, and they are more or less form messages. The first wire is sent out at about 7 o'clock in the morning and contains information as to the estimated receipts that will arrive on that market; the second message goes out at 8.15, which we call the opening hog-market wire, giving the opening prices on hogs; and at 10.30 a complete report goes out, containing detailed quotations on cattle, hogs, and sheep.

Mr. ANDERSON. That is over your wire?

Mr. BURMEISTER. No; it goes over the commercial wires, in addition to the bureau's leased wires. The commercial telegraph companies send these reports for \$12 a month to people who want the information.

Mr. WHEELER. There are three reports a day for \$12 a month, but a large number of the subscribers just take the last and complete report, for which they pay \$6 a month; it is a wire containing the complete report for the day.

Mr. ANDERSON. Is there any contemplated increase in this service?

Mr. WHEELER. Yes. This part of the service was allotted in 1921 \$159,240, and there is estimated for the coming year \$310,490. That absorbs that portion of the leased wires which would properly be assigned to this service and the extensions of the leased wires to Fort Worth and Sioux City.

Mr. ANDERSON. What does this increase contemplate?

Mr. WHEELER. That increase contemplates the extension of leased wires to Fort Worth and Sioux City, and the addition of offices at those points, an additional office at St. Joseph, and an office at San Francisco. The office at San Francisco would not be connected with the leased wire. The increase also would permit the addition of assistants at the various field offices, the five central field offices, Chicago, East St. Louis, Kansas City, Omaha, and South St. Paul. At the present time they are operating with a very much decreased force; in fact, it is very difficult for them to get out their complete reports daily.

Mr. ANDERSON. How much of this increase of about \$150,000 represents the increased cost of the leased wire; can you say offhand?

Mr. WHEELER. About \$45,000. It is given here as \$44,420 for telegraph and telephone combined. That would not be all leased wires.

because it includes leased wires and commercial wires. The increased supplies and stationery would be \$35,000. It happened the past year that a large quantity of stationery and equipment was made available by the discontinuance of some of the other offices and they were able to use a good deal of that stationery and equipment, which had been purchased in advance because of the better prices that could be gotten at that time and a contemplated increase in prices, so that during the past year they have not had to purchase anywhere near the amount of stationery and equipment that was used. Stationery includes mimeograph paper, as you understand, which is a large item in our mimeograph service. There is an increase also in travel of \$10,000, and an increase in salaries amounting to \$23,520 for the technical force, and \$14,360 for the clerical force, making a total increase of \$151,250. If the increase were granted, the following additional activities would be considered: To improve the service at existing offices by providing a more adequate service, to reopen branch offices at Fort Worth, San Francisco, and to establish new offices at live-stock markets, such as Sioux City and St. Joseph, which are not now reported and whose patrons need and demand the service.

LIVE-STOCK SERVICE.

Mr. RUBEY. I do not know whether I want to ask you any questions or not, but I would like to know how you are going to help the live-stock market by this business. I can see how you can be beneficial to the vegetable and fruit growers, but how are you going to help Bill Smith, who lives out in the country and is feeding a carload of stock for the market; how are you going to help him?

Mr. WHEELER. When he ships his cattle to market.

Mr. RUBEY. How are you going to let him know and help him get the benefit of this service?

Mr. WHEELER. We keep him informed on the general market conditions, and when his live stock is shipped to market he has the same kind of information that the other party in the transaction would have.

Mr. RUBEY. He gets the daily reports which are set out in the papers every morning. Will the report he gets from your department be any different from those reports?

Mr. WHEELER. Most of the reports he gets from the papers would be from our reports.

Mr. RUBEY. Does the paper published at the stockyards at Chicago, for instance, get their reports from the Government?

Mr. WHEELER. All the operations in the Chicago live-stock market are done on the basis of our service.

Mr. RUBEY. Take the Drovers' Journal, for instance, do they get their information from the Government?

Mr. BURMEISTER. May I relate an instance that happened this summer right in that connection. A live-stock salesman came around to our office and informed us he lost \$45 on a shipment of veal calves because he had not read our reports. He said he had been reading a report in a commercial paper and he came on the market early in the morning with this load of calves and sold them on the basis of the quotations that appeared in that journal that came out the day before, and the price he sold them at he thought was the top of the

market, and he found out later that the paper underquoted the market by 15 cents per 100 pounds, and as a result of his not reading our reports he turned his calves loose at 15 cents under the market price.

Mr. RUBEY. Do you suppose that if he had held them he would have gotten any more than that?

Mr. BURMEISTER. The point he made when he came around and told us about it was that if he had not let the calves go he could have gotten 15 cents more because the market was steady and had not changed, but he was willing to let them go at the price he saw in the paper. Now, that is just one instance. This man came around to the man in charge of our Chicago office and voluntarily told him that instance.

Mr. RUBEY. Then this journal does not get its information from you?

Mr. BURMEISTER. No; it maintains its own force of market reporters.

Mr. RUBEY. How about the paper published in the stockyards at East St. Louis—I have forgotten the name of it.

Mr. BURMEISTER. There are several owned by the same organization.

Mr. RUBEY. And they get their own information?

Mr. BURMEISTER. Yes.

Mr. RUBEY. Have you anything to show that this service is appreciated by the cattle feeders and shippers?

Mr. BURMEISTER. We could by the letters that come into us commending the service and by what people tell us. I may tell you another instance that happened; we were showing an exhibit of our live-stock classes and grades at the International, during this last show, and a man came in who was disgruntled over the prices he had received for his stock, and said he had not received the market value. He became interested in this exhibit, looked it over, and discovered an animal that looked similar to those he had sold. He saw the name we gave to that particular grade and looked up our reports and found that the prices we quoted were the same he had received, and he went away satisfied. He said he had found out that he had received what the stock was worth, according to our reports.

Mr. RUBEY. Well, it is a good service if you can satisfy all these men who have been losing thousands of dollars.

Mr. BURMEISTER. We have a letter written on Christmas day from Fort Collins, Colo., from a man who wants to know why we do not report the Denver and St. Joe markets. He says he wants that information to compare it with the other markets that we do report. We get letters like that all the time.

Mr. LIVINGSTON. I think I may say, Mr. Chairman, that the live-stock reporting service, more than any other reporting service we have, indirectly affects producers more than directly; in other words, we do not have field stations as we do in fruits and vegetables where we can open up a station at the time live stock is starting for market and give them a daily telegraph report at the time that stock is moving, but it does report the market accurately in the markets where we are established, and the newspapers and the telegraph companies and other people, not all of them but a large part of them, who are quoting market prices have based their quotations on our service, so

that the indirect effect of the service is much greater than it is possible, I think, to indicate definitely. That is much more true of this service than it is with fruits and vegetables where we come in direct contact with the shipper of a carload of potatoes or some other commodity at the time he is shipping them.

Mr. WHEELER. If you pick up any of the Washington papers and look at the live-stock quotations, you will find that most of them give us credit and tell where the information comes from, but a good many of the papers do not show the source of the market reports, but it would be the same report as furnished by us at the five large live-stock centers where we have offices.

Mr. RUBEY. You understand that I am not criticizing the service. I am just doubtful whether it will do any good. I am hopeful it will.

Mr. WHEELER. Do you wish me to go along with the others?

Mr. ANDERSON. Yes.

Mr. WHEELER. I will not go into detail on poultry and dairy products unless there are some questions to be asked. It shows an increase of \$52,000 from \$91,000 this year to an estimate of \$143,000 for 1922.

Mr. ANDERSON. Is this some more of the leased-wire cost?

Mr. WHEELER. Part of the leased wire cost is in here and part is for additional assistants. Perhaps, the dairy and poultry service, more than any service in the list, is operating on a very small force at the present time. They have had to curtail their services at the various offices. They have not cut down the number of offices but have decreased the number of people and have worked in conjunction with the other services and have curtailed the service accordingly.

Mr. ANDERSON. Is this a daily service?

Mr. WHEELER. Yes; we have three daily news services.

POULTRY SERVICE.

Mr. ANDERSON. Where do you get your daily information, for instance, on poultry?

Mr. WHEELER. Our poultry service is very limited. Nearly all of this service is on dairy products. We have no quotations on eggs and I think none on poultry, but we give the receipts and shipments and cold storage changes daily.

Mr. LIVINGSTON. The increase, Mr. Chairman, is for the purpose of putting on poultry reports.

Mr. ANDERSON. Where would you get them.

Mr. LIVINGSTON. Just where we get our other daily reports. We would go out where they are selling poultry and interview the people who are parties to the transactions.

Mr. WHEELER. In the live-stock market, before our service was started, the quotations that were given out were based on simply interviewing a few men. Now, our men interview from 75 per cent to 100 per cent of the people actually engaged in the transactions. In cattle, perhaps, it runs from 80 to 90 per cent of the actual transactions each day; with sheep, perhaps, 100 per cent, and with dairy products, similar results would be obtained.

This ends the three daily telegraphic services.

HAY, FEEDS, AND SEEDS REPORTING SERVICE.

Then we have a service on hay, feeds, and seeds. This is information gotten out weekly in the Market Reporter giving weekly summaries on hay, feed, and seed market conditions, seeds during the particular seasons of the year, and hay and feeds during the entire 12 months of the year. These weekly summaries have been of considerable assistance to dairy men and live-stock feeders in keeping them in touch with the feed market conditions which do not fluctuate so much from day to day as some of the other commodities. This is more of a service for consumers than producers. The hay and seed service is for both producers and consumers and feeds particularly for consumers. We have numerous letters from organization and others as to the value of the market news service on seeds, and we received a letter just the other day from an organization in New Jersey stating that they had saved \$2,000 on a shipment of feed by keeping in touch with our service through the columns of the Market Reporter.

Mr. LIVINGSTON. Mr. Chairman, may I say at this point that we did not bring a lot of recommendations up here this year, because we did not think you had time to go through them. If you want them we can bring you up quite a pile of them.

Mr. WHEELER. Just in relation to one of our services, the Market Reporter alone, we have about 17,000 letters that have come in in the last two or three months, showing the actual parts of the Market Reporter that had been used by these particular people in their operations; that is, what part of the market reports they have actually used and how they have used them. The Market Reporter is a weekly publication that was started last January, and gives summaries of the market conditions on all important agricultural commodities. The reports are made up from our various news services, summaries prepared by our specialists, and the publication is gotten out weekly. In order to determine whether this publication was filling the need and what parts of the publication should be continued, we asked the readers of the Market Reporter to indicate the parts of the Market Reporter that are actually used by them and what were of first value and what of secondary value. I have not all the information so that I can give you the tabulation of those returns yet. They are being tabulated at the present time, but out of about 24,000 readers of the Market Reporter the approximate number of letters that came in was about 16,000, indicating that the reports were being used by the readers.

When the Market Reporter was first established the point was brought out that we would not be getting this information to the people quickly enough for them to act upon it, but we have our daily telegraph service and mimeograph reports for immediate news. Mimeograph reports are very difficult things to keep on file and difficult things to read and keep as a matter of permanent record. The Market Reporter was established a year ago to fill this need. The first number was dated January 3, 1920. We hope to improve it, and the letters that have come in will be our guide in eliminating or including other reports as they may be needed. In addition to the actual market news services we are trying to assemble statistics which will be valuable in years to come, and be valuable at the present time, in

considering the market conditions as they come up. So we are using a small amount of our funds in summarizing the vast amount of statistical material that is accumulating in the mimeograph reports and others through our news services.

Mr. BYRNES. What good will that information do in the years to come?

Mr. WHEELER. The only basis on which we can consider market conditions or seasonal conditions is upon the conditions as they have been in the past, and the compilation and summarization of these statistics is absolutely necessary in order to get the maximum benefit out of our services in the future. If we take a period of 10 and 20 years and find the time of the highest and the lowest prices, that data will be of considerable assistance in helping the producer to determine when it will be best to market his products.

Mr. BURMEISTER. I would like to say that a large part of our letters is for information regarding prices and movements over previous years. We get more requests for that kind of information than anything else from people who are trying to figure out what the market is going to be in the future.

Mr. WHEELER. I think, in closing, I will just say that our demands for this service are increasing daily. Never before have we had the demand for market information that we have at the present time, both for immediate information and for summaries of conditions both domestic and foreign. Organizations of all kinds are looking to us for assistance in the present emergency situation and they feel that market information is one of the things that will be of great assistance to them in knowing how to market their products.

FRIDAY, DECEMBER 31, 1920.

TELEGRAPHIC EXPENSES.

Mr. ANDERSON. I wanted to ask in connection with the item we were discussing yesterday, Item 78, if you continued your work on the same basis as at present, how much increase in the appropriation would be required to cover the additional telegraphic expenses due to the increase in price.

Mr. LIVINGSTON. I could not tell you that offhand, Mr. Chairman, but I will be very glad to go over the matter and give you a detailed statement of the increased cost.

Mr. ANDERSON. The statements you have here would indicate it to a certain extent but not with entire accuracy.

Mr. LIVINGSTON. Yes; I understand you want it in definite form.

Mr. HARRISON. And on the basis of the present service.

Mr. ANDERSON. Yes.

Mr. LIVINGSTON. Very well, I will be very glad to send it to the committee.

INVESTIGATING THE TRANSPORTATION, STORAGE, PREPARATION, MARKETING, AND DISTRIBUTION OF AGRICULTURAL FOOD PRODUCTS—INVESTIGATION CONCERNING THE RETAIL MARKETING OF MEAT.

Mr. LIVINGSTON. The next item, Mr. Chairman, is item 79, relating to investigational work on storage, transportation, and marketing

generally. We are asking for no increase in that item. As a matter of fact, there is an apparent decrease of \$4,700 due to a transfer of two clerks to the statutory roll. We are carrying on two distinct lines of work under that item at the present time. One of them is an investigation concerning the retail marketing of meat. This work has been under way approximately one year, and the activities under way may be grouped as follows: We are making a general survey of the retail-meat trade in 30 cities, covering a total population of about 3,000,000, representing the entire country. Canvasses of all dealers in those cities have been made and there are approximately 5,000 of them. The information is now on schedules and is being summarized. We are getting detailed information as to the operating expense of about 300 dealers and 1,200 chain stores; the results of the investigations should show the relationship between wholesale prices of meat and the price of live stock and the relation of the retail price to the wholesale price of meats. This work we hope to conclude this fiscal year; in fact, it will probably be available in printed form soon after the close of the fiscal year. That will close out this particular investigation.

Mr. ANDERSON. There have been two or three investigations of this character that I have known something about since I have been here, and I do not think there was ever any report made on any of them.

Mr. LIVINGSTON. You refer to retail-meat investigations?

Mr. ANDERSON. Investigations along lines of relative costs and of wholesale handling, and the slaughtering and retailing and the whole business.

Mr. LIVINGSTON. This work, as you will recall, is carried on in co-operation with the Trade Commission, and this part of the work was definitely assigned to the Bureau of Markets. It was not possible to take it up until the present fiscal year. Our work last year was largely with live stock, grain elevators, and certain features of grain marketing. The Trade Commission has already published their report on live-stock marketing, with the exception of the retail end of it, which this investigation will complete.

Mr. ANDERSON. When these reports finally come out, will they come out as Federal Trade Commission reports?

Mr. LIVINGSTON. This one possibly will.

Miss LYNE. The live-stock report has been published as part 6 of the Federal Trade Commission's report.

Mr. LIVINGSTON. Yes; our contribution to the study of live-stock marketing for the Federal Trade Commission thus far has already been published. This is the remaining part of that investigation, namely, the retail end of it.

Mr. ANDERSON. The retail meat end of it?

COST OF MARKETING MILK AND POTATOES.

Mr. LIVINGSTON. Yes. The other part of the money is being spent for studying the cost of marketing of two commodities, milk and potatoes. We have that investigation well under way and probably will be able to complete the present investigation on those two commodities about the end of this fiscal year. The appropriation next year will be devoted to the same kind of work, taking up two other important commodities. Our plan is to take up only one or two im-

portant commodities and complete them rather than to cover a large number at the same time.

Mr. ANDERSON. I think that is desirable. I suppose there are more people to-day who are thinking about the wide spread between what the farmer gets or between the cost of all raw materials and what the final consumer pays than there ever were before.

Mr. LIVINGSTON. Yes.

Mr. ANDERSON. I have heard it said, for instance, that it cost more to sell the world's goods than it does to make them. I understand that a survey of manufacturing plants during the last three years indicated approximately 50 per cent of the cost paid by the ultimate consumer represented the cost of production, the manufacturers', the wholesalers', and the retailers' profit, and that the remaining 50 per cent approximately represented the cost of transportation and the cost of selling.

Now, if that is an accurate statement of the situation, it seems as though there is a field there for some sort of development. I do not know what it will be, but people are expecting that something is going to be done to reduce the cost of selling them what they get. Of course, that includes, I suppose, a large amount for advertising and all sorts of selling cost.

Mr. LIVINGSTON. Yes. I think the forthcoming Trade Commission report on the grain situation will give that information for grain, and the meat report, when it is completed, should give it also for meat. Our plan is to take up one commodity at a time and give substantially that information. It requires very careful study and one difficulty is the inadequacy of the accounting systems of many people from whom we are obliged to get information.

Mr. HARRISON. In his paper on cooperation, Mr. Powell, the general manager of the California Citrus Fruit Growers' Exchange, says:

Generally speaking, the expense of distributing a farm crop to the consumer—not including the cost of transportation, but only including the gross expense of the distributing agencies—represents 50 per cent of the price paid by the consumer.

Mr. ANDERSON. If that is true, something is wrong somewhere.

Mr. HARRISON. And that is an organization of the growers themselves, who are selling their own products.

Mr. ANDERSON. Of course, they have a widespread distribution and a long haul.

Mr. HARRISON. Yes; and they spend a great deal for advertising.

Mr. ANDERSON. In a case of that kind you are restricted in your area of production, so you can not bring your area of production close to your market, so as to reduce transportation cost and deliver within the efficient area of the selling or distributing organization. I know there are hundreds of concerns in the country—I am satisfied there are—who are selling on national sales plan, where they sell a large part of their goods in competition at long distances from the producing center at an economic loss. Now, that is all wrong.

Mr. LIVINGSTON. It is just that kind of information, on obtaining which we have been somewhat slow in starting, that will enable us to get the facts in the case of each particular commodity and finally summarize it for the various products as a whole.

Mr. ANDERSON. I think the question we are primarily interested in is not only getting the information but determining what can be done after the information has been obtained.

Mr. LIVINGSTON. Yes.

Mr. ANDERSON. I realize that that is not particularly the job of the Bureau of Markets, but the information is not going to be of much value if it is simply information.

Mr. LIVINGSTON. I understand it must be put up in such shape that it will lend itself to the drawing of conclusions.

Mr. ANDERSON. Yes.

Mr. LIVINGSTON. That, Mr. Chairman, covers very briefly the work we are doing under that item.

MARKET INSPECTION OF PERISHABLE FOOD PRODUCTS.

The next item, No. 80, is the market inspection service for perishable food products, and I would like to have Mr. Sherman, who is in charge of a part of that work, explain the item to the committee.

Mr. ANDERSON. What happened to this item last year, Mr. Sherman? Do you remember?

Mr. SHERMAN. There was a slight reduction made, of about \$7,000.

Mr. HARRISON. And certain phraseology was eliminated from it at the same time.

Miss LYNE. No phraseology was eliminated, but the changes we asked for were not made.

INSPECTION SERVICE—CHANGE OF LANGUAGE.

Mr. SHERMAN. Mr. Chairman, this is a case, as you may remember, in which the Senate once introduced something in the bill which was not in the estimates. The inspection service was originally appropriated for some three years ago by an amendment or an addition to the bill which occurred in the Senate, where about \$100,000 was added. The language at that time limited the service to inspection of products on arrival at important central markets designated for the purpose by the Secretary, doubtless because the Senator who introduced the amendment knew that with that amount of money we could not go any further than that. That limiting language has remained ever since, and it limits our work to important central markets designated for the purpose by the Secretary which is now unfortunate. For the purposes of inspection, we include, as in the Chicago market, everything that can be construed within the metropolitan district of Chicago. We do that in order that our inspectors may be able to go from Chicago to those places in important cases, where the applicants for the service are willing to pay the traveling expenses of the man, in addition to the fee. For these reasons we are asking for two slight changes in the language this year, as you will notice. We are asking for the removal of the interstate movement clause, and also for the removal of the designated markets clause, or at least for additional language, such as "or at points which may be conveniently reached therefrom," which virtually does away with that limitation.

Mr. ANDERSON. There has always been very strong opposition in the Agricultural Committee to extending this inspection service beyond shipments made in interstate commerce, and I am inclined to think that striking that language out would result in your whole item going out of the bill.

Mr. SHERMAN. I would like to show you just how it works, practically. It is a service, as you realize, and not a regulatory measure. It is not based on the interstate clause of the Constitution. It is a service rendered on application for a fee. We do not inspect anybody's product except as we are asked to inspect it for some one who has money at stake and who is willing to pay for having the inspection made. Therefore there can be no legal reason why it must be limited to interstate shipments and why it must be limited to products that are moved at all.

Mr. ANDERSON. I do not think it was the idea of limiting it on legal grounds that resulted in putting that language in the item. I think it was the idea of limiting to some extent the amount of work that could be done normally under this item.

Mr. SHERMAN. As it works out now it does not limit at all the number of men employed, neither does it limit the number of points at which the service is rendered. It simply limits it in this way, that our inspectors in New York City may be called on by a receiver to inspect two cars of grapes that have come from the Lake Erie N. Y., section. They may be standing side by side on the tracks. One of them originated at Westfield, N. Y., and the other originated over the line at the town of Northeast, Pa. The inspector may go down to the yard and inspect the car that originated in Pennsylvania but can not inspect the car that originated across the line in New York, although they have come the same distance and the receiver is willing to pay the fee.

Our inspector makes the trip to the yards and has earned \$4 for the Treasury instead of \$8. It means, in Milwaukee, for instance, where we have a city of over half a million people, that we are practically compelled to keep an inspector there if we are to serve the principal markets. It is logical that one man should be maintained in Milwaukee during a large part of the year, but practically all the potatoes and cabbages that the city consumes are grown in Wisconsin, and during several months of the year the inspection of potatoes and cabbages form the bulk of the inspection work in that market. Therefore, during about six months, our man in Milwaukee is relatively, you may say, on half duty, because he can not inspect any of the products received in Milwaukee that are grown within the State. The same thing occurs with reference to potatoes in the Twin Cities in your own State, and that same situation renders it practically impossible to maintain the service on the Pacific coast, because the fruits and vegetables consumed in San Francisco and Los Angeles are so largely produced within the State that when you limit the inspection to interstate shipments there is simply no business there to do.

The suggestion was that the fee should be fixed with a view to making the service as nearly self-supporting as possible and that has been the intention all along.

We are now progressing toward self-support and are making material progress this year, but I do not see how we can ever reach self-

support with these two limitations; in fact, my ambition is to make the service three-fourths self-supporting. I think the general welfare resulting from the expedited movement of fruits and vegetables and from keeping so many cases out of court is well worth one-fourth of the cost of the service, but I see no reason why we should not make this service three-fourths self-supporting if we are willing to serve the people who are willing to pay for the service.

Mr. ANDERSON. You make this inspection at the request of either of the parties to the contract?

Mr. SHERMAN. Any party involved.

Mr. ANDERSON. Either the shipper or receiver?

Mr. SHERMAN. Either the shipper, receiver, or the railroad company.

Mr. ANDERSON. Are your certificates, when once made, usually accepted by all the parties to the contract?

Mr. SHERMAN. Your act makes them prima facie evidence.

Mr. ANDERSON. I understand that; but that, of course, is in case they are brought into court.

Mr. SHERMAN. As a matter of practice, the fact that they will be considered prima facie evidence, if carried into court, is the best guaranty that they will not go to court. They have appeared in court several times in cases where even with the facts before them the parties could not agree as to the extent of the damage or the money payment that should be made; but, as a matter of fact, settlements are usually made on the basis of our certificates.

Mr. ANDERSON. You say that this is all voluntary and in a sense it is, but that provision does make it practically compulsory, does it not?

Mr. SHERMAN. Not at all; that does not make it compulsory. It simply means the man who pays \$4 for this inspection has a certificate which may not serve his purposes at all, because it may show he is in the wrong; but it is prima facie evidence, and whether it is in his favor or against him, if it goes into court it can only be upset by a preponderance of evidence.

Mr. HARRISON. It would be prima facie evidence only in the Federal courts.

Mr. ANDERSON. I understand that. I know what the legal effect is, but I am trying to get at the practical effect.

Mr. SHERMAN. The practical effect of it is that there is no compulsion about it whatever, because certain railroads use it and certain railroads do not. Certain railroads in the West depend upon the Moorehead inspection altogether.

Mr. ANDERSON. I am wondering whether you can make a certificate of inspection on an intrastate shipment prima facie evidence in a Federal court.

Mr. HARRISON. As I said just now, I think it would be prima facie only in a Federal court.

Mr. SHERMAN. The fact is, however, that you can make anything prima facie evidence in a State court if you choose to dignify it as such, can you not?

Mr. BYRNES. You can not do it unless the State by statute makes it prima facie evidence in the State courts. The State by statute can make the possession of an internal-revenue certificate prima facie

evidence of the right to sell liquor, and in many States that is done, but that is by State statute.

Mr. ANDERSON. As to intrastate shipments, the certificates would not be prima facie evidence in a Federal court and would not be of much value, because I do not see how you could get them into the Federal court to begin with.

Mr. HARRISON. Mr. Sherman's point is that people shipping in intrastate commerce would like to have the certificates just the same, and that in the majority of cases they will form the basis of settlement between the respective parties.

Mr. ANDERSON. Personally I do not see any objection to making the inspections when requested by the interested people, but I do not want to do what we can not do by undertaking to make those certificates prima facie evidence and make ourselves ridiculous by trying to do so.

Mr. HARRISON. The item says "in all courts of the United States." That limits it to the Federal courts.

Mr. ANDERSON. I know it does, but the question is whether you can make a certificate applying to an intrastate shipment, as you now propose to do, prima facie evidence in a Federal court. As I say, I do not see how it could get there anyhow, so it would not make any difference; it would only make it appear that the Congress was undertaking to do something which, on its face, it could not do.

Mr. HARRISON. Could we not insert this proviso, that certificates involving such transactions——

Mr. ANDERSON (interposing). I think the language could be modified so that it would cover the situation.

Mr. HARRISON. If we insert the word "interstate" in the proviso and remove it from its present place, I think the matter would be cleared up entirely.

Mr. SHERMAN. As a practical matter that would make very little difference because, as I say, a settlement is usually made on the basis of the certificate without any thought of going to court. However, that will increase very materially the collections that we could make with the same force, and the removal of that restriction would not impose upon us the necessity of going into any place where we do not go now. It would enable us, however, to increase very largely our collections by going to the markets at points of origin. We could go to a few markets at points of origin, like Laredo, Tex. We could designate Laredo, Tex., as an important onion market for three months in the year when the crop of several thousand cars is moved from that territory. We could station a man there for that period to inspect shipments outbound, and the shippers would pay \$4 per car for hundreds and hundreds of cars for the sake of having our certificate attached to their shipping documents as an aid to making sales. We have the most earnest letters of commendation from exporters in New York who are asking Federal inspections on fruits and vegetables before they go abroad, especially to the Norwegian and Scandinavian countries, with the idea of sending the Federal inspection certificate along with the shipping documents, and they are referring us to the commendatory letters they have from their bankers and receivers on the other side, and from everybody concerned, to the effect that this shows that they have dealt in absolutely good faith with the people to whom they are shipping and

have sent them stock which was, when shipped, exactly what it purported to be.

Mr. ANDERSON. Have there been any complaints that these inspection and these certificates have not been sound?

Mr. SHERMAN. Yes; of course, there have been complaints. They have been nonsustained, however, and, so far as we know, no certificate has been upset in court.

Mr. ANDERSON. What do you mean by "nonsustained"? Do you mean in the courts?

Mr. SHERMAN. Yes.

Mr. ANDERSON. Where a certificate is called in question do you make an investigation to determine whether the certificate was properly issued or not?

Mr. SHERMAN. We make as much of an investigation as it is possible for us to make. We have had this sort of a case: This year we have had an unusual amount of wireworm in potatoes in New Jersey. New Jersey grew a fine, large crop so far as size was concerned, but the growers in that State have had an unusual amount of scab and also an unusual amount of wire worms which, generally speaking, are not serious things in the potato crop of the United States, but when you get a large potato with wireworm right straight through it, although not specked on the outside, you can see that that throws it out of grade No. 1, which results in an appreciable loss. There have been a great many inspections called for at receiving markets in New Jersey as to potatoes this year on account of the wireworm injury, and we have had certificates that showed, in many cases, that the cars did not conform to the United States No. 1, although they were of large size, and the general appearance of the lot was good.

Now, of course, the shippers have challenged us very bitterly on those certificates; they said we were too severe, but in every case where potatoes were still available and could be reinspected—in some cases where the shippers had representatives in Pittsburgh or Cleveland, who could be called in to see the inspection made—we have been able to show them that we were right.

Mr. BYRNES. What are you doing about foreign shipments? Do I understand that you have been engaged in issuing certificates on foreign shipments?

Mr. SHERMAN. Yes, sir; we inspect, you see, anything moving in interstate or foreign commerce; that is, foreign commerce comes in the same as interstate commerce, and, as a matter of fact, all of the foreign shipments relate to shipments made abroad. You do not mean in this country, of course.

Mr. BYRNES. No; I mean abroad. Are you inspecting shipments that are sent abroad?

Mr. SHERMAN. Yes, sir; in New York City, particularly.

Mr. BYRNES. What service can you render there?

Mr. SHERMAN. I have a letter from a Norwegian—

Mr. BYRNES (interposing). I do not mean what he has to say.

Mr. SHERMAN. We issue exactly the same certificate there that we would issue if we were inspecting for anybody else in New York.

Mr. BYRNES. But you issue them there at the place of consignment, while an inspection is generally made when the fruits or vegetables arrive at destination.

Mr. SHERMAN. You see these are usually northwestern apples that come to New York for export abroad or they are barreled apples. They are moving in interstate or foreign commerce.

Mr. HARRISON. It has been received at an important central market.

Mr. SHERMAN. Here is a letter which it might be interesting to read and have placed in the record:

DECEMBER 3, 1920.

SECRETARY OF AGRICULTURE,

United States Department of Agriculture, Washington, D. C.

HONORABLE SIR: We are very large exporters of American-boxed apples, our principal markets being the Scandinavian countries; and during the past two years we have shipped very large quantities of apples to mentioned markets. We have made it a custom to have each and every carload received by us from the Northwest inspected by your department, and have attached to our documents the certificates issued by your department showing the condition of the goods when inspected. We have found this inspection service indispensable and desire to take this opportunity to voice our appreciation of this excellent service, which we regret is not to a larger extent being taken advantage of by exporters of apples or other fruits and by the receivers of such goods here.

The certificates issued by your department, and which we are attaching to our documents, are a guaranty to our customers abroad that it is our aim to ship them only the best fruit obtainable, and that these certificates are a guaranty to them that the goods when inspected or when shipped from New York were in good condition, as verified to by your department certificate, and a great number of our foreign customers have very favorably commended us for supplying them, in addition with our documents, a certificate issued by your department showing the condition of the goods. Our bankers here have also expressed their commendation to us for taking advantage of your department's inspection, as your certificate is a guaranty to the banks as well that we are shipping our customers goods of desirable quality and in good condition.

The writer, who has the honor of being secretary of the Norwegian-American Chamber of Commerce, New York, has recommended to the chamber to send out a notice to their American as well as to their Norwegian members to take advantage of the inspection of your department in the future, and as one deeply interested in promoting trade between the United States and foreign countries, the writer feels that the inspection service rendered by your department is invaluable and very commendable. The writer, personally, has had occasion to note with pleasure the extreme care with which your inspectors here are examining the goods, and especially last year we had occasion to fully appreciate the advantages of your inspection service, in that a number of carloads of apples from the Northwest arrived in a very frozen condition, and having purchased the goods subject to Government inspection on arrival of the goods in New York, we were able to reject such cars without any protest from our sellers, as they fully recognized that the report of your inspectors and the certificates issued by them could not be questioned as to the condition of the goods.

During the past two months we have received approximately 40,000 boxes of northwestern apples which we have exported to our customers abroad, and each and every lot has been inspected by your bureau, and documents showing the condition of the goods have been forwarded to our customers abroad, who again have commended us for attaching these certificates to our papers.

The writer feels that this inspection service should be encouraged and taken more advantage of by the merchants in general dealing in perishable goods of this above-mentioned kind. We also desire to commend upon the fitness of your inspectors who evidently, without any exception, seem to know their business, and we feel that the services rendered by these inspectors should be encouraged by the Government.

Yours, very truly,

OLAF HERTZWIG TRADING CO. (INC.),
_____, President.

Mr. BYRNES. That is where the goods are obtained by the exporter from the producer?

Mr. SHERMAN. Yes, sir.

Mr. BYRNES. So that really the inspection is no different from the inspection usually made?

Mr. SHERMAN. It is no different.

Mr. BYRNES. At first I thought the shipper in the Northwest was shipping them abroad and that you were starting to inspect them while en route.

Mr. SHERMAN. No; that is not done now. You see, the shipper can make use of our inspection certificate as a selling document, but under our present limitations it depends upon his geographical location. Piowaty, of Chicago, handles large quantities of Wisconsin cabbage, which is shipped to the South during the fall and early winter months; they stop that stuff in Chicago while it is relatively fresh, only having been loaded a couple of days; they stop dozens of cars in that way, and last year hundreds of cars were stopped in Chicago in order that we might inspect them.

There was not a thing the matter with them and they knew that; it was good stuff coming through from Wisconsin going South, and they wanted a Government certificate showing that it was good stuff in order that they might offer a customer in Memphis a car Government-inspected, and with such a certificate attached. Incidentally, our certificate shows whether the range in sizes is between 2 and 4 pounds or between 6 and 8 pounds, and it gives information which we did not have before. That enables the shipper to wire his customers and offer them certain ranges of sizes, and a shipper is glad to pay \$4 a car for that inspection. That is profitable business because it does not take long to make those inspections, because you do not have to dig to the bottom of the stuff in order to determine its condition; you can easily take the weights and sizes and easily determine whether it is green, slightly yellow in color, or fresh. That inspection is adding money to the Treasury every day, and that is where the money is, and if we could go to Laredo, Tex., and to some of these heavy producing sections, where the crop movements are for few months' periods, and put inspectors there, that service would be far more than self-supporting immediately.

Mr. ANDERSON. Does the State of California have State-inspection service?

Mr. SHERMAN. Yes; and we have been cooperating with them in putting on a shipping point inspection service; we had some of our inspectors go there to help instruct their inspectors so that their inspections at the shipping points would correspond with ours at the receiving points, so that we would not run in conflict. As a purely voluntary matter, they have made their inspections at points of origin more than self-sustaining the first season.

Mr. ANDERSON. How many States have this sort of inspection?

Mr. SHERMAN. No other State but California has such inspection as that. Texas has a law providing for inspection, but the Texas inspection is different in many respects, but I do not think it is self-supporting. Texas really has a law on grading and shipping, and it has a sort of an enforcement organization; that is what their inspection is. Wisconsin has put something of the sort on this year tentatively; they are experimenting with it; but, generally speaking, the States do not have shipping point inspection service. But whether we go to shipping points or not, and if we do nothing but maintain the offices we have and the men we have now in these States, we can

very materially increase the amount of business done, if we can inspect everything we are asked to inspect, without a dollar of increased expense to ourselves; and then we should have that other change of language, which will allow us to go and make inspections at points which can be conveniently reached. That would permit us, if we were called on to do so, to go to Malden, Mass., to inspect a lot of potatoes.

The inspector could get on a trolley and go out to Malden, even though it may not be specifically designated. This fall we have had a particularly large number of requests to go to small towns to inspect that we could not handle because they have not been specifically designated for the purpose by the Secretary.

Mr. HARRISON. The shipper pays the fee and the traveling expenses?

Mr. SHERMAN. Yes; he would pay the fee and the traveling expenses. A person asking for an inspection in many of these small towns wants it more than they do in a big city, because he is willing to pay the transportation charges in addition to the fee—that is, the car fare and the expenses of the inspector, in addition to the fee—for the sake of having the inspection made.

DAIRY INSPECTION SERVICE.

As to the progress toward self-support, the dairy part of this inspection is already on a practically self-supporting basis, there being only four men paid from this inspection fund for dairy inspection work, and their butter-inspection fees for the first four or five months of the year have amounted to over \$2,500 already.

Mr. ANDERSON. The fees you receive go into the treasury?

Mr. SHERMAN. They go into the treasury as miscellaneous receipts.

Mr. ANDERSON. There is no specific provision to that effect, but the general law covers that?

Mr. SHERMAN. Yes; the general law applies to that.

Mr. WASON. Is there any special item in the Treasurer's report that would show where they come from when placed to the credit of your department?

Mr. HARRISON. I doubt whether the individual items are set out in that report. We can easily enough give you a statement showing the receipts from all our activities.

Mr. SHERMAN. Yes; we keep that record.

Mr. WASON. Why should not that be done, not only in this particular branch, but in all of the other branches, in order that the public, which is interested, may know?

Mr. HARRISON. I am not saying that the information is not given in the annual report of the Secretary of the Treasury; I have never had occasion to look into the matter, but I doubt whether the report gives the receipts in detail.

Mr. WASON. I do not think it does, because I have tried to find that information.

Mr. HARRISON. If the committee would like to have a statement showing the receipts from all our activities, we would be very glad to give it to you.

Mr. WASON. I would like it.

Mr. ANDERSON. We had such a statement last year.

Mr. HARRISON. It has been the usual practice to include it in the report of the committee. Our receipts run about five or six million dollars a year, which, of course, ought to be deducted from the expenditures which are charged to us.

The statement follows:

REVENUES AND RECEIPTS.

The revenues and receipts during the fiscal year 1920 amounted to \$5,208,832.36 and were covered into the Treasury. They include the following items:

Receipts from national forests, \$4,793,482.28.—The receipts from the national forests were derived from the following sources, and represent an increase of \$435,067.42 over the year 1919:

(a) Timber, \$2,025,289.47: Sales of all classes of stumpage on the national forests, payments for timber destroyed on rights of way or other uses, payments for timber cut or removed without previous permit, and damages assessed against persons setting fire to forest areas.

(b) Grazing, \$2,486,040.20: Payments for grazing privileges on national-forest ranges for cattle, horses, swine, sheep, and goats, and for unauthorized use of grazing areas.

(c) Special uses, \$282,152.61: Payments for use of forest lands for various purposes, such as residences, camps, cabins, hotels, rights of way, agriculture, wharves, water power, telegraph and telephone lines, reservoirs, conduits, etc., and use of forest areas for turpentine extraction.

Benefits derived by States from receipts from national forests.—Under existing law 10 per cent of the forest receipts is expended by the Secretary of Agriculture in the construction of roads and trails, and 25 per cent of the forest receipts is paid to the States by the Federal Government for the benefit of county schools and roads. The amounts expended in or paid in each State during the fiscal year 1920 are shown below:

State.	School and road moneys payable to States.	Road and trail moneys expendable by Secretary of Agriculture.	State.	School and road moneys payable to States.	Road and trail moneys expendable by Secretary of Agriculture.
Alabama.....	\$146.82	\$58.73	New Hampshire.....	\$5,421.68	\$2,168.67
Alaska.....	26,730.37	10,692.15	New Mexico.....	77,802.42	31,144.97
Arizona.....	124,628.19	49,851.27	North Carolina.....	7,601.66	3,064.66
Arkansas.....	17,752.07	7,100.83	Oklahoma.....	1,415.65	566.26
California.....	181,003.31	72,401.33	Oregon.....	121,623.51	48,649.40
Colorado.....	115,512.01	47,404.80	South Carolina.....	170.89	68.36
Florida.....	6,112.08	2,444.83	South Dakota.....	21,522.50	8,609.00
Georgia.....	1,813.92	725.57	Tennessee.....	6,006.99	2,402.80
Idaho.....	124,847.79	49,939.12	Utah.....	65,510.92	26,204.37
Maine.....	424.92	169.97	Virginia.....	5,388.14	2,155.25
Michigan.....	383.27	153.31	Washington.....	74,261.89	29,704.76
Minnesota.....	6,659.24	2,663.69	West Virginia.....	527.53	211.01
Montana.....	88,017.19	35,206.87	Wyoming.....	63,075.74	25,230.30
Nebraska.....	3,872.69	1,549.08			
Nevada.....	28,709.74	11,483.89	Total.....	1,180,063.13	472,025.25

Additional benefits derived by Arizona and New Mexico from receipts from national forests.—The States of Arizona and New Mexico received additional shares of national forest receipts for their school funds on account of school lands included within national forests, as follows: Arizona, \$64,774.01; New Mexico, \$8,455.74.

Telegrams over Government lines, \$6,050.79.—These receipts are derived through the transmission of private messages over Weather Bureau telegraph lines in isolated regions where commercial lines are not yet available.

Sale of cotton standards, \$11,203.05.—These receipts are derived through the sale of practical forms of the official cotton standards prepared by the department to the various exchanges, spot-market dealers, merchants, cotton mills, agricultural colleges, and textile schools.

Cost of cotton-futures disputes, \$204.—These receipts are derived through the settlement of disputes referred to the department from time to time by either party to a contract of sale of cotton for future delivery, for determination as to the quality, grade, or length of staple of the cotton, in accordance with the provisions of the United States cotton-futures act.

Sale of loose cotton, \$22,926.21.—In the preparation of practical forms of the official cotton standards it is necessary for the department to purchase in the open market considerable quantities of cotton in order to match the various types and classes of cotton. A large quantity of the cotton thus purchased is found unsuitable for use in making copies of the official cotton standards, and this is disposed of to dealers at the best price obtainable.

Cost of grain-standards appeals, \$15,312.90.—These receipts represent charges made for the settlement of appeals from the grading of grain by licensed inspectors; also disputes as to the correct grade of grain entering into interstate commerce between noninspection points referred to the Department of Agriculture in accordance with the provisions of the United States grain-standards act.

Cost of inspection of perishable food products, \$57,050.09.—These receipts are derived from the inspection of perishable food products authorized in the general expense appropriation made to the Bureau of Markets for carrying on such work.

Costs of classification of cotton, \$41,702.68.—These receipts represent charges made for classifying cotton pursuant to the seventh subdivision of section 5 of the United States cotton-futures act. The receipts are made a revolving fund as provided in said act under the head "Classification of cotton, wheat-price guaranty act of March 4, 1919."

Sale of photo prints, lantern slides, etc., \$1,832.83.—These receipts are derived through the sale of photo prints, lantern slides, transparencies, blue prints, and motion-picture films to State institutions, publishers, and individuals for use in lecture work and in connection with the preparation of publications bearing on agriculture and related subjects.

Sale of hearings, \$109.05.—These receipts are derived through the sale of hearings conducted by the department from time to time in connection with the enforcement of regulatory acts, particularly the food and drugs act and the insecticide and fungicide act. These hearings are sold to corporations, firms, and individuals desiring them at the rate of 10 cents per folio to cover the cost of preparing them.

Sale of card indexes, \$110.84.—These receipts are derived through the sale of card indexes of experiment station literature to various agricultural colleges, experiment stations, educational institutions, and libraries throughout the country.

Sale of other miscellaneous property and collections, \$252,313.38.—This covers the sale of unserviceable property owned by the department which has been passed upon and condemned by a board of survey appointed by the Secretary of Agriculture. It also covers the proceeds derived through the sale of farm products obtained at the various experiment stations of the department, other than the insular experiment stations; animals and animal products no longer needed in the work of the department; forest maps and maps and publications of the Weather Bureau; pathological and zoological specimens; samples of pure sugars and naval stores; microscopical specimens, etc.

Sale of products, agricultural station, Alaska, Hawaii, Porto Rico, Guam, and the Virgin Islands, \$6,534.26.—These receipts are derived through the sale of agricultural products obtained on the land belonging to the agricultural experiment stations in Alaska, Hawaii, Porto Rico, Island of Guam, and the Virgin Islands.

Mr. SHERMAN. This inspection work is a little different from most of the other work of the department, in this respect, that if you would give us a very small appropriation for overhead and then make our fees a revolving fund we would serve the people of the United States, and we would be able to extend this service much more rapidly than you would be willing to extend it and the people would be willing to pay for it. It appears that we are going to turn into the Treasury this year, unless we have an exceptionally mild winter and no freezing, \$85,000 of our appropriation. We are going at that

rate now. Collections up to this time since the first of the fiscal year are at the rate of \$85,000 a year.

Mr. ANDERSON. You have evidently become somewhat conservative since the note in the estimates was made, because in that note you say:

Fees are also being charged at the present time for copies of certificates furnished to interested parties, and it is estimated that at least \$110,000 in fees will be collected during the fiscal year covered by this estimate.

Mr. HARRISON. That has reference to next year.

Mr. SHERMAN. Yes. We are absolutely running at the rate of \$85,000 this year.

Mr. ANDERSON. You are going to cost us \$64,000 more next year, and you are going to earn \$25,000 more.

Mr. SHERMAN. You give us that change of language and I think we will do better than that.

Miss LYNE. That only concerns fruits and vegetables, anyway; that does not take into consideration fees received on account of butter and hay inspections.

Mr. ANDERSON. The \$85,000 you speak of refers to fruits and vegetables alone?

Mr. SHERMAN. Yes.

Mr. ANDERSON. That is practically all you are doing now—carrying on an inspection service as to fruits and vegetables?

Mr. SHERMAN. Well, there are four men on butter, and the butter fees for 1920 were \$3,495, and the allotment for butter for the present fiscal year out of this fund is \$7,200, and at the rate we are going now they should collect \$7,500 in fees. The butter end of the inspection is running now at a rate slightly better than self-supporting.

Mr. WASON. Does that include the inspection of oleomargarine or butter and oleomargarine?

Mr. SHERMAN. No; only butter.

Mr. WASON. How can you differentiate, since such a large percentage of the butter that is marked butter contains the oil of oleo?

Mr. SHERMAN. You are now asking a technical and chemical question.

Mr. WASON. No; that is a practical question to the consumer. You do not have to make an examination to find out whether there is oil of oleo in straight butter fats, do you?

Mr. SHERMAN. Well, if we are inspecting butter at the request of a Minnesota creamery they are subject to pretty severe penalties if they ship something as butter that is not.

Mr. WASON. I have not noticed any prosecutions for a number of years, and still the oleo butter product is on the increase.

Mr. SHERMAN. Yes.

Mr. WASON. Do you know of any Washington market where you can buy a pound of butter? I would like a little information.

Mr. SHERMAN. I am glad to say I live out in the country and keep my own cows, so that I do not have to know.

Mr. WASON. But you are in the department?

Mr. SHERMAN. Yes; I think there is no doubt about that, and my impression is that in the wholesale trade there is no confusion between butter and butter substitutes; I think that everybody dealing in butter in a wholesale way knows whether they are dealing in butter or something else.

Mr. WASON. And your agents could, if a retailer who has purchased from a wholesaler has a dispute with him and calls for them——

Mr. SHERMAN (interposing). They are limited by this same interstate clause that we are limited by on fruits and vegetables. As a matter of fact, they have a sliding scale of fees for these inspections of rather small quantities.

Mr. WASON. I am not very familiar with this law, because I have not studied it, but I live 40 miles from Boston, and a large proportion of the butter in my particular city comes from the middlemen of Boston; a great deal of it comes from Vermont creameries, Maine creameries, and some from New Hampshire and Massachusetts. We also have a wholesaler in Nashua. Suppose he buys from a commission man in Faneuil Hall Market, Boston, and there is a dispute, can he send for your inspector in Boston and have him come and make an inspection?

Mr. SHERMAN. As a matter of fact, I do not think the dairy inspectors go outside of the large communities where they are stationed: I do not think they answer out-of-town calls, and I do not think many of these small places have been designated as central markets for purposes of dairy inspection. I am not familiar with that particular point because administratively I am only responsible for the fruits and vegetables end of it. In the Bureau of Markets we are organized on a commodity basis, and I am in charge of the fruits and vegetables division.

Mr. WASON. Turning to something you are familiar with, if instead of butter it was lemons or pineapples which the wholesaler buys and there is a dispute between him and the retailer and he sends for your man in Boston, would he go there?

Mr. SHERMAN. He would if it is a market which has been designated by the Secretary as an important wholesale market under the law. We are asking that that language be amended so that there will be no question about our going there.

Mr. WASON. Take the Boston market.

Mr. SHERMAN. We do go to Concord, however, and Manchester, N. H.; they are designated points. We go to those points from Boston on request if the Boston inspector is not too busy to get away.

Mr. WASON. Do you know why the Secretary designated Concord, with a population of 14,000, and overlooked Nashua, halfway between, with a population of 30,000?

Mr. SHERMAN. I am not sure, but Nashua may be designated: I am not positive, and I do not believe I have that list here.

Mr. WASON. What I was getting at is this: What do your inspectors on fruits and vegetables do in Boston?

Mr. SHERMAN. Here is the list. Manchester and Concord are the only two designated in New Hampshire. The designation usually takes place after we have had some calls for inspections in those towns, and after certain dealers request it and want us in the future. Then we ask the secretary to designate those as important central markets, but the change of language that we have asked for will enable us to go as far out from our headquarters as the applicant may be willing to pay the railroad fare. The only point there is that this outside business can hardly be made profitable to the Treasury, because if a man goes to Manchester, N. H., he makes one

inspection that day and he put \$4 in the Treasury, and his salary is more than \$4, although the applicant must pay, in addition to that \$4, his traveling expenses there and back. But the out-of-town inspection is not a profitable business for us, but once in a while it is exceedingly important for the people because there may be a large amount at stake.

Mr. BYRNES. I understood you to say that if the language asked for were included in the bill you would give your personal promise that the inspections would increase, but now you say it would not be a profitable business.

Mr. SHERMAN. I say this out-of-town business, as far out as Nashua, N. H., where a man would only make one inspection a day, would not be profitable.

Mr. BYRNES. Then it is a question of distance entirely?

Mr. SHERMAN. Yes; it is a question of distance. When I was in Boston the other day I went to the Charlestown potato house with our inspector to see the Maine potatoes inspected. They were not United States No. 1 because of the mixed varieties. Our inspector went out with his scales and his card with the various size holes and went right into the sacks that had not been opened. He did not touch a sack that had been already opened. That is always the rule—he makes his own selection. He goes into a car and weighs out right at the top of the sack 15 or 20 pounds, usually a peck of potatoes. They are handled individually, every one. If there is any question of size then they go through the hole in the card and a record is made of them.

Then another sack is opened and the same thing is done until we have an average of the proportion of potatoes showing deep cuts, bruises, and decay, whatever the defect may be. That is put on the card and also the percentage of small ones. That is figured right there, and if the percentage of defects is above the regulations of United States Grade No. 1 the certificate will show that this car does not meet the requirements of United States Grade No. 1 because of an excess of defects, deep cuts, bruises, etc., whatever the specific cause may be, and the percentage. The certificate is detailed and specific, so both the receiver and the shipper can see exactly what happened in that car. So they have a definite basis on which to adjust the differences.

Mr. WASON. Do you have different sizes for the different varieties of potatoes?

Mr. SHERMAN. United States No. 1 provides a minimum size of $1\frac{1}{4}$ inches for round potatoes and $1\frac{3}{4}$ inches for long. No. 2 potatoes must be $1\frac{1}{2}$ inches in diameter. Everyone knows what United States No. 1 is. There is no compulsion about using the grades, but the Food Administration made these grades mandatory and required the people to ship the potatoes as No. 1, No. 2, or unclassified. The trade became so pleased with that system that they have stuck to it ever since, and it is difficult to sell potatoes now unless you show that they meet the requirements. If you are willing to sell them on the market you can ship them on open consignment, and the receiver sells them as best he can for you. It is merely a trade custom. It merely shows how ready the trade is to follow any good practice when they have been doing a little differently.

In barreled apples a certain number of barrels is opened, and that is a pretty difficult thing to do in a car. You have to take the head of the barrel out and dig down into the center. In Chicago the other day we made an inspection of a car of barreled apples in which there were two different shippers, and each shipper had three different varieties. One man's Black Twigs were different from the other, and one man's Grimes were different from the other. The car had been turned down by the receiver, and the shipper wanted an inspection on it; and the shipper being an organization, had put two different growers' stuff in that car. Where there are two or more commodities in a car we charge a separate fee for each commodity. That is one means by which we increase the collections. We are trying to make the fees somewhat in proportion to the amount of work involved. I have a feeling that we should go further and make a specific fee for each commodity. Barreled apples are difficult to inspect, and it takes a long time, because you have to put in the heads without the proper machinery.

Mr. ANDERSON. How many barrels would you open in a car?

Mr. SHERMAN. I should say offhand, where we had practically eight inspections to make, they must have opened over a dozen barrels, because there were two barrels of each variety belonging to each shipper. They worked in the car two or three hours.

Mr. WASON. What is the effect of that work on a barrel of apples or fruit when it reaches the consumer?

Mr. BYRNES. You mean the opening of the barrel?

Mr. WASON. The opening of the barrel and digging down into the apples.

Mr. SHERMAN. If the apples had been well barreled in the first place, there may be none. You can not get all of those apples back into the barrel again unless you press them in and force the head on. As a result of that inspection, I presume, there were a bushel or a bushel and a half of loose apples in the car.

Mr. WASON. What effect does that have on the barrel?

Mr. SHERMAN. It is not injured, because we can not put pressure enough on the head to hurt the apples. In every barrel we open, if the barrel has been properly packed, the apples on the surface are bruised or pressed absolutely flat, otherwise they have not been properly packed. If you do not put the apples into the barrel so that they are pressed flat, they will work loose in a short time, and you have a movement in the barrel which does more damage than the pressure on the head. More than that, we do not injure the fruit in handling it at all.

INSPECTION OF HAY—INCREASED PERSONNEL.

In this item (hay) you will notice we have asked for an increase. I think we have two men now and we propose to hire five more. The committee has included hay in this item in years past by putting the word "hay" in with other perishable farm products, but did not add any money to the item, and therefore no work has been done under hay. Assuming that the committee wants some hay inspections made, we have included in the estimate an item of \$41,800 for hay inspection during the next fiscal year.

I might say that the preliminary work on hay grading, hay standards, and hay inspection is being done on the field-laboratory scale, and if the committee includes this money in the bill they are prepared to put in the inspection service in cities, which, I think, are named in the estimate—New York, Atlanta, Memphis, Pittsburgh, Cincinnati, Chicago, Kansas City, and St. Louis—but let me suggest that it would greatly hamper us in conducting a hay inspection service unless you will remove the interstate-commerce clause. Of what value would the hay inspection service be in Omaha if they could not inspect Nebraska hay, because in Omaha you have the market for practically all Nebraska hay moving east? You have at St. Louis almost very largely Missouri hay moving east and south, and if you can not inspect Missouri hay in St. Louis your business is cut off more than 50 per cent. The same is true of Cincinnati; if you can not inspect Ohio hay to the south, the business at Cincinnati is finished in the very beginning.

Mr. BYRNES. I do not get your point; possibly I was not in the room. If hay arrives at St. Louis, consigned to New York, you can not inspect it?

Mr. SHERMAN. If it is hay that originates in Missouri we can not inspect it under this act at St. Louis, which is one of the main hay markets of the world.

Mr. BYRNES. Even if the shipper of hay asks you to inspect it?

Mr. SHERMAN. We can not do it if it originates in the State.

Mr. BYRNES. Why?

Mr. HARRISON. Because we are limited in the matter of inspection. We can inspect in the St. Louis market any hay that comes from outside of Missouri.

Mr. BYRNES. It involves a shipment from points in Missouri to St. Louis?

Mr. SHERMAN. Yes, sir. The great quantity of hay that comes to the St. Louis market comes from Missouri. As a matter of fact, that is the way hay is sold—hay comes to St. Louis and is resold there to the South.

Mr. BYRNES. That is the point?

Mr. SHERMAN. Yes, sir. The National Hay Association has branches in these different cities, and Kansas City is possibly the biggest hay market in the United States. Hay which comes to Kansas City from the country shipper is handled there by some large handler and then goes south to points in Texas. The present inspection service is conducted by the association of hay dealers. When hay comes to Omaha from Nebraska points the inspection is made there and the shipper gets the return that his hay grades No. 3, maybe No. 3 alfalfa, according to the hay association rules, and he is paid on that basis, and he has no recourse.

Mr. BYRNES. As soon as the hay is turned over to be shipped to Oklahoma it comes within the clause that you have referred to?

Mr. SHERMAN. Yes, sir.

Mr. BYRNES. You could then inspect it and the certificate could be forwarded to Oklahoma?

Mr. SHERMAN. The difficult proposition, however, is that you have to unload the hay to make the inspection, because hay is one of the commodities that must be inspected in the process of loading or unloading. It is an expensive business to inspect a car of hay, 50 bales,

and then put the hay in the car again. There is also the labor. If you break open a bale you can not put that in. The inspection of hay has to be made in the course of unloading or as piled up in the warehouse—either in the process of loading or unloading.

Mr. ANDERSON. What is the effect of the establishment of grades upon the product that does not come up to the grades? You have established United States No. 1 and No. 2 on potatoes. I suppose quite a lot of potatoes come into the market which do not come within the grades?

Mr. SHERMAN. Yes, sir.

Mr. ANDERSON. Are the potatoes that do not come within the grades sold on sample, and do they bring practically what they are worth?

Mr. SHERMAN. They are sold on sample for what they are worth.

If you give us the increased money that we have asked for, almost every dollar will go back into the Treasury. We have turned down 2,500 requests this year by not having the proper amount of money to do the business. If you give us that money, it will not be spent on a lot of pioneer work, which is unprofitable in the beginning. We would put a man at Pittsburgh, and we would put one at Louisville, which we can not now do.

There would be ample justification for putting one at Hartford, Conn., one at Louisville, and one at Toledo. Then we could maintain the offices all the year round. We should maintain a couple of men to go to these heavy producing markets, where they would make a profit every day. We think we can turn every dollar of the increase back into the Treasury, and that there will be no additional burden on the taxpayer.

INVESTIGATING, DEMONSTRATING, AND PROMOTING THE USE OF STANDARDS FOR THE DIFFERENT GRADES OF COTTON.

Mr. LIVINGSTON. Item No. 81, for investigating, demonstrating, and promoting the use of standards for different grades, qualities, and conditions of cotton. We are asking for no increase in that item. If the committee desires to have Mr. Meadows explain how that work is carried on, he is present.

Mr. ANDERSON. My recollection is that last year there was a good deal said about some difficulty in working under this item, due to the high price of cotton. The fight this year is about the low price of cotton, and we may be able to reduce this item.

Mr. LIVINGSTON. I am sure that I can not give you much encouragement about reducing it.

Mr. MEADOWS. I am a citizen and native of Alabama and I have no direct interest in cotton of my own, but I am familiar with cotton growers, and my point of view is that of the cotton producer.

Mr. LIVINGSTON. Mr. Meadows is in charge of the cotton work of the Bureau of Markets.

DECREASE IN ESTIMATE.

Mr. BYRNES. What is the explanation of the decrease from \$40,000?

Mr. HARRISON. Merely transfers to the statutory roll.

Mr. ANDERSON. What is being done under this item toward testing the waste, tensile strength, and bleaching qualities of the different grades and classes of cotton in order to determine their spinning value and for demonstrating the results of such tests?

Mr. MEADOWS. We have men who are conducting tests of the various grades of cotton represented by the standards and also the different growths or varieties of cotton. For instance, during the year we have had tests made of the comparative spinning value of sea-island cotton and Meade cotton, a new variety developed by the Bureau of Plant Industry. As a result, we found that Meade cotton is about $3\frac{1}{2}$ per cent more wasteful than sea island. On the finer yarns Meade is about equal to the sea island in breaking strength, but in the coarser numbers the sea-island is stronger. The boll weevil has invaded the southern part of the United States and has almost stopped the growing of sea island cotton. Meade is an early maturing cotton and promises to be a substitute, and of course the manufacturers and others like to know the comparative spinning value of the two growths.

Mr. BYRNES. Meade is grown in Arizona?

Mr. MEADOWS. No, sir; I think in Georgia largely, and possibly in South Carolina, in all of the sea island belt. It is a substitute for sea island. In Arizona—

Mr. ANDERSON (interposing). There is not much grown?

Mr. MEADOWS. Not much. We hope to develop a cotton that will take the place of sea island cotton.

Mr. BYRNES. What does this testing do?

Mr. MEADOWS. We have made spinning tests of the various grades of the official cotton standards. At the present time we are testing the off-colored cottons, the standard of tinges and stains, and we hope to do that thoroughly. That test has not yet been completed, but it is along the right line for demonstrating the qualities and real spinning value of the various grades of tinged and stained cotton, and it is then information that is fundamental in the standardization of cotton. You ascertain the intrinsic value through the kind of investigations we are making.

Mr. ANDERSON. Do the manufacturers show any interest in ascertaining the results of this investigation?

Mr. MEADOWS. Yes, sir. We supply them with bulletins. Whenever we complete an investigation we write a bulletin, and that bulletin is supplied to manufacturers or merchants, or whoever may ask it, and they do show an interest in getting that information.

Mr. ANDERSON. What is the difference between the work under this item and the cotton-handling work done under the other item?

Mr. MEADOWS. There is quite a difference. As to the one we are now considering, spinning tests supply basic information as regards the standards. We get that up in the best form that we can and use it in bulletins. We likewise, I think, cooperate in some projects, such as attempting to have the standards more generally adopted and used. For instance, Georgia has recently adopted a law making the official standards of the United States the standards for Georgia. Alabama has substantially the same law. That law is pending in other States. That work is done under this appropriation. The other work we do is demonstrational work—educational, if I may

speaking of it in that way. We promote the use of the standards by educating the farmer up to a better way of putting his crop on the market.

Mr. ANDERSON. That is what you do under the other item.

Mr. MEADOWS. Under the other item, in my own thinking, the work is educational in every case, and we make demonstrations to show the advantages of trading on standards——

Mr. BYRNES (interposing). You demonstrate it?

Mr. MEADOWS. Yes.

Mr. BYRNES. How?

Mr. MEADOWS. By having, first, a State leader and under that State leader cooperative associations in the different States. The association employs a man who grades cotton and supplies growers with information as to the grades of cotton held for sale. We do not sell the cotton, but we give the information on which the farmer can go to the buyer and sell his cotton.

Mr. ANDERSON. That is exactly what you are doing under the other item, as far as I can see. Maybe I am dense, but I do not see it.

Mr. MORRILL. I think Mr. Meadows is eminently a practical man, but he is not informed to make an explanation as to these things. There is a practical difference in the work. In other words, under this item there is no cooperative demonstrational work at all. It is purely independent investigational work designed to bring about the establishment of the standards by the Agricultural Department as to qualities and grades not already covered by the standards, and to inform the people of the country about the standardization work with a view to securing adoption by the States and outside agencies like the Liverpool Association. The demonstrational work is carried on under the other item by a different method and for a different purpose. It is extension work. It is demonstrational work, pure and simple. It takes up the results of the investigational work, the work of designing and establishing standards, and carries to the farmer knowledge of the benefit of these standards and also makes available to him information that is gained through the testing and other work which they do.

Mr. MEADOWS. I want to thank Mr. Morrill for that explanation. It is better than I could have made and states the facts exactly.

Mr. MORRILL. I may say this, then, as to the adoption of the present standards that Mr. Meadows and another man were called upon to try to bring about a joint adoption of the same standards by the Liverpool Cotton Association and this country. Half of our cotton is sold abroad and Liverpool has standards of its own. Mr. Meadows and this other man succeeded in convincing all the members of the appropriate committees of the Liverpool Cotton Association of the desirability of adopting our standards. The Liverpool Cotton Association itself failed to act upon that, because the war had about commenced, and they have not since taken up the question. However, at the last meeting of the World Cotton Conference at New Orleans the question of a uniform classification was considered and it seems to have made such an impression that, in the next World Cotton Conference at Liverpool, next spring, the question will be again brought up for consideration and at that time we hope to secure the adoption of standards so that there will not be two sets of

standards used in commerce, one the Liverpool standards, different from the American standards, so that when the farmer sells his cotton he will sell it on one basis.

Mr. BYRNES. Have the State legislatures adopted these standards?

Mr. MORRILL. Some of them. Of course, we do not go before the State legislatures, we do not try to influence them. We operate through the farmers. That is the way we worked in Georgia and Alabama.

Mr. BYRNES. Is the American Cotton Association now urging it?

Mr. MORRILL. In South Carolina.

Mr. BYRNES. But the States ought to do it. The way it is now a farmer picks up a newspaper and finds one quotation in Atlanta, another one in Columbia, and another one in Savannah; we ought to have a uniform standard.

Mr. MEADOWS. You have a uniform standard, but you do not get the uniformity of quotations, because at best that is an approximation of value, and there is always slight variation. We are talking now about middling cotton.

Mr. BYRNES. Of different quotations.

Mr. MEADOWS. Aside from the quotations that are represented by grades, there are other questions as to price of cotton that are reflected. This does tend toward uniformity. There is much more uniformity now than there was five years ago when the standards were first promulgated.

Mr. ANDERSON. But I observe that the millenium has not come in the cotton business yet.

Mr. MEADOWS. No, sir.

Mr. WASON. What good does it do for the legislatures of Georgia and Alabama, or, to make it comprehensive, for all of the cotton-growing States to adopt these principles in the grading and classification of cotton if they are not adopted by Liverpool?

Mr. MEADOWS. It does this much good, in that you have the cotton quotation service in the United States on one basis. Of course, it would be much better still for the cotton business, if Liverpool would agree to our standards, so that the American cotton business for the whole world would go one standard or basis.

Mr. WASON. Then I understand the effect of your answer to be this: It is of benefit because the cotton grower of the State knows just what a certain grade of cotton ought to bring?

Mr. MEADOWS. Yes, sir.

Mr. WASON. And even though Liverpool does not adopt that standard, it is information to the agricultural producer in the country that is of great benefit to him, and, of course, it is incidentally beneficial to the American buyer of raw cotton, because he knows what to depend upon when he goes into the market to obtain his raw material?

Mr. MEADOWS. Yes, sir.

Mr. ANDERSON. Are the differences between the Liverpool grades and our grades so great that a man who understood the cotton business would not be able to approximate the Liverpool grade if he knew what the American grade was?

Mr. MEADOWS. If he understands the Liverpool grade, he could make an American grade that would approximate it.

Mr. ANDERSON. That would require an examination of it, would it not?

Mr. MEADOWS. That would require an expert in the cotton business. Of course, the farmer does not know that, but the expert in the cotton business does know. For instance, if a man should send cotton of middling grade, according to the official standard of the United States, he would not call that Liverpool middling, but "fully middling." He would sell that all over Europe as "fully middling."

Mr. BYRNES. You could not hope for Liverpool to adopt our standard so long as we were not on a uniform standard here.

Mr. MEADOWS. We are working toward uniformity in the cotton trade in the United States, and it is just a matter of education or of getting the facts out. What we are doing in this direction is appreciated by the cotton trade and by the farmers, and I am sure that in due course of time we will have uniformity in the United States. Then, when we have gotten uniformity in the United States, if we can get Liverpool to agree to the same standards, when cotton is shipped abroad, there will be no "disjoints," or classifications according to our standards will not be out of joint when cotton is shipped abroad.

Mr. WASON. Then, if I understand you, in its last analysis the point is really this: That any standards that the cotton-growing States of the United States Government may establish for the different grades of cotton will be known to the cotton grower, and he will know how to grade his cotton under that standard?

Mr. MEADOWS. No, sir; not that. I do not pretend that the cotton grower as such will know how to grade cotton under the standards, but he will appreciate certain elements that go to make up the standards. Cotton grading is an art which requires from two to five years time to master.

Mr. WASON. Where is that grading done—at the mill?

Mr. MEADOWS. Sometimes it is done at the mill, but it is more likely to be learned in a cotton grader's office. At present, there are schools that teach the art, and a young man may in a year or two become proficient in the art of cotton grading. I do not mean to say that the cotton planter will be a cotton grader, but we can teach him that if he will pick his cotton clean, use better methods in ginning, use the proper system in baling it, and place it in a warehouse where it will be kept dry and where it will be kept free from country damage, he will be benefited in the sale of his cotton. A great deal is lost now because the farmer ignores such things frequently. We want a uniform standard, but we do not say that the farmer will become a cotton classer or grader.

Mr. WASON. When he brings his cotton from the field to the market, or wherever he delivers it, he will know whether the man who is the expert grader is cheating him or not?

Mr. MEADOWS. Yes, sir; he will know that.

Mr. WASON. And that will be of benefit to the grower?

Mr. MEADOWS. Yes, sir; and will not necessarily entail any hardship upon the ultimate consumer.

Mr. WASON. Of course, it could not be any hardship upon the consumer if he gets what he buys.

Mr. MEADOWS. No, sir; there will be no hardship in that. It is the idea to develop a system by which the cotton producer may sell his cotton to the mill or consumer with the least amount of loss due to the profits of middlemen.

lished a scale of prices that it would pay for the different grades of wool on the scoured basis. All the wool taken over by the Government was valued by the valuations committees of the War Department and purchased in accordance with the published scale. The dealers were supposed to buy under the regulations from the growers of the wool at such price as the wool would yield under the Government valuation, but a limit was fixed upon the profit which they were allowed to make.

Then there was added to the regulations a proviso that if at the end of the season any dealer had made in his total season's business more than the allowable profit the excess profit should be disposed of as the Government might decide. When it became known that certain dealers were making excess profits, and that the growers were protesting against it, in the latter part of December, 1918, the War Industries Board gave assurance that those excess profits which they collected from the dealers would be returned to the growers. We inherited that promise and have been trying to carry it out, and it has proven to be a tremendous undertaking.

Mr. BYRNES. How do you find the growers who are entitled to the excess profits?

Mr. SHERMAN. The dealers are of two classes, or permits were issued to two classes: first, the country dealers, who buy wool from the grower, and, second, the distributing center dealers. There were 3,600 country dealers to whom permits were issued, and 178 distributing center dealers who eventually handled all of the wool. The Government dealt directly with the distributing center dealers, and the country dealers disposed of their wool to the distributing center dealers either by a second sale or by consignments. These distributing center dealers, under rules of the War Department, had to classify and grade the wool and prepare it for the valuation committees.

Mr. BYRNES. Whom are you reimbursing on this account?

Mr. SHERMAN. We are reimbursing the individual growers.

Mr. BYRNES. How do you get the names of the individual growers?

Mr. SHERMAN. We get the name of the individual grower from the country dealer who bought the wool from him. At the end of the season we called upon 3,600 country dealers to make reports upon forms furnished, giving the names and addresses of the woolgrowers from whom they purchased wool, with the dates and amounts of wool purchased from each one, and giving also the price per pound and amount paid to each grower.

Mr. BYRNES. Suppose you have collected in excess profits the sum of \$1,000,000: Are you going to take the list of growers and the amounts of wool that they sold to the country dealers during that year and then undertake to distribute this \$1,000,000 among those woolgrowers in proportion to the amounts of wool that they sold?

Mr. SHERMAN. To the individual growers of the wool upon which the dealers have made excess profits. All of the dealers did not make excess profits.

Mr. BYRNES. But we will suppose that you have already collected \$1,000,000 in excess profits: Will you take that \$1,000,000 and divide it among the growers in proportion to the amount of wool that they sold during the year to the country dealer or anybody else?

Mr. SHERMAN. In a general way; yes, sir. Stating it in detail, one dealer may have made an excess profit of 1 cent per pound

while another dealer may have made an excess profit of 8 cents per pound. Now, the grocer who sold to the second dealer will get a refund of 8 cents per pound, while the grower who sold to the first dealer would get a refund of 1 cent per pound.

Mr. BYRNES. In other words, if John Smith, a wool dealer, got a big rake-off, you will try to divide that big rake-off among the growers who sold their wool to John Smith?

Mr. SHERMAN. Yes, sir.

Mr. BYRNES. What kind of bookkeeping establishment have you got?

Mr. SHERMAN. That is what we want to impress upon you. We inherited this work and set out to do this thing. We have set up the machinery with which to do it; and you can realize what it means to make a distribution of these funds among 150,000 people.

Mr. BYRNES. How many men do you employ in this work?

Mr. SHERMAN. We have two men and eight clerks. Of course, our field auditing is now about done.

Mr. BYRNES. I would like to know what it will cost to make this distribution. When we get through with the collection of the excess profits, what will be spent in redistributing them among the growers? How much field auditing have you done?

Mr. SHERMAN. I do not know how to answer that when you say "how much."

Mr. BYRNES. How much is provided in this estimate for that?

Mr. SHERMAN. We have practically finished it.

Mr. ANDERSON. This is the second year that this has been going on?

Mr. SHERMAN. Yes, sir; we inherited it on the 1st day of January, 1919. We had \$35,000 the first year, \$15,000 the second year, and we are asking for \$15,000 now. There will be an undistributed balance left in the Treasury of far more than the amount we have ever asked or will ever ask in the future for the purpose of handling it. This will be a little money-making job for the Treasury. After we get all of the money back into the hands of the growers that we can, there will be a substantial balance left. That is true because certain dealers kept very incomplete records, and we can not get the names of the growers in every case. Then there is a mortality of about 15 per cent in any mailing list.

Mr. ANDERSON. What do you do when you find that a grower is dead?

Mr. SHERMAN. It goes back into the Treasury.

Mr. ANDERSON. It does not go to his estate?

Mr. SHERMAN. If there is anybody competent to claim it, it will be claimed, but, as a general rule, the amount is so small that it is not claimed.

Mr. ANDERSON. What is the average size of the checks being issued?

Mr. SHERMAN. The average size of the check is very small. I think I might say that we have distributed principally small checks. We have distributed excess profits of 220 dealers so far in 16,873 checks, carrying the total amount of \$49,748.07, or the checks were for about \$3 apiece.

Mr. ANDERSON. There will not be enough over.

Mr. SHERMAN. The largest check sent out there will be some heavier ones. Here are

for an estate to fight
as for about \$500, but
one of the complica-

tions: The war Industries Board had records showing the issuance of permits to 2,300 country dealers, but in going over and working on the accounts of the distributing center dealers, and particularly when finding out the people from whom they bought wool, we have discovered and added to that list 1,334 more dealers.

In other words, we have added one-third to that list of dealers. Those men operated without permits, and many of them in utter disregard of the regulations. As fast as we found that they were dealers, we called upon them for the same reports that the other people have been required to make, and we have collected excess profits from them just as we have from the other people. Now, we have those people standing out against us.

Mr. ANDERSON. Do they have a list of the growers?

Mr. SHERMAN. In many cases the lists are incomplete. We have figured that from 20 to 25 per cent of the money could not be redistributed on account of incomplete reports, and to that you must add about 15 per cent allowance for returned checks. There will be a considerable sum left in the Treasury.

Mr. ANDERSON. What has been the average price paid for the wool?

Mr. SHERMAN. I could not tell you. I do not know what were the proportions of the different grades.

Mr. ANDERSON. Practically all of it would be above 50 cents per pound, would it not?

Mr. SHERMAN. On the scoured basis, I think so. I have not a copy of the regulations here, but the published regulations showed the scale, and the scale price was on the scoured basis.

Mr. ANDERSON. Is there anything else on this item?

Mr. SHERMAN. We have collected up to date \$557,497.26. We have in sight as the result of our audits almost \$500,000 more, making a total of a little over \$1,000,000 that should be paid to us if we can get it all. Of the remainder outstanding, about \$250,000 is in the hands of one firm who may be expected to resist payment to the last.

Mr. ANDERSON. Is that the only contest you have?

Mr. SHERMAN. No, sir; there are a number of people who are standing off to see what will happen. You can get an idea of that from those figures. Of the 178 central dealers, or the big men against whom most of the criticism was leveled, one-half of the reports were audited and found to be O. K. When I say they were audited, it does not mean that we went into the offices and performed a field audit in every case, but it means that we required a sworn report to be made by them on a form prepared by us which brought out all of the facts necessary for us to know. If there is no reason to challenge the reports we have not challenged them, but where, for any reason, the information was incomplete, or where we have the allegation or the accusation that the facts were not correctly reported to us, we have made field audits. We had four men in the field for three months. In the case of 66 of those 178 dealers, we had excess profits, and of the 66, 51 have paid, leaving 15 of the distributing center dealers who now hold the bulk of this nearly \$500,000 of uncollected excess profits.

Mr. ANDERSON. Then you will have \$500,000 practically distributed among 15 dealers?

Mr. SHERMAN. There are some country dealers involved, but the rest of it is in the hands of those 15 dealers. Taking the total number of reports of country dealers operating with permits or without permits, or 4,812, of that number 2,869 were found to be O. K., or made no excess profits. We have collected excess profits from country dealers, and we have 50 country dealers owing us excess profits who have made no settlements. We have two cases now under audit of newly discovered country dealers. That discovery is going on every day, and it happens in this way: For instance, we have collected from one firm in Boston \$83,000 in excess profits. Their lists of purchases shows largely the names of country dealers who have permits, but it also shows a certain number of names of growers. We find many of those who are listed as growers, however, are men who have sold, say, 20,000 pounds of wool. Now, assuming that he was a dealer, we write to him and ask him whether he himself produced any or all of this wool sold to the market. He writes back and says that he produced 750 pounds of that wool and bought the rest. We then call upon him for a statement naming the growers that he bought from.

When we find in that statement another item of, say, 5,000 pounds of wool he got from somebody else, and we take that up with him, because he becomes another dealer. In some cases we have absolutely traced as many as four dealers going down the line, and from each one of them we have to secure a report.

Mr. HARRISON. You will understand, Mr. Chairman, that while the Department of Justice will have charge of and conduct any prosecutions that may be brought, we will have a great deal of work to do in getting the cases in shape for the Department of Justice to handle. We will have to assemble the facts and present a prima facie case to the Department of Justice. We must also get the witnesses together and see that they are on hand at the time of the trial. Frequently our men also are called upon by the Department of Justice to assist its officers at the trial.

Mr. SHERMAN. We have presented to the office of the solicitor 10 rural dealer cases and 20 country dealer cases, or 30 cases for prosecution.

Mr. WASON. Were they submitted to the Department of Justice?

Mr. SHERMAN. We have passed that number of cases to our solicitor.

Mr. HARRISON. He prepares them and puts them in shape for the Department of Justice.

Mr. SHERMAN. Our solicitor's office does that work.

Mr. HARRISON. We have sent three cases to the Department of Justice, as I recall it. Others are in course of preparation in the solicitor's office now.

Mr. SHERMAN. It often happens that the other party wants to make some promise in some way. Many of these men are not in a position to make any promise, and they ask us to take their notes.

COOPERATIVE WORK WITH STATE INSTITUTIONS CONCERNING MARKETING FARM PRODUCTS.

Mr. LIVINGSTON. The next item is No. 82, on page 269. That item relates to the cooperative work with the State institutions. We are

asking for no increase in it, and the work is carried on in a way similar to the way it was carried on last year. I can give you a brief summary of the work that is carried on: We have 41 field agents in 26 States.

Mr. ANDERSON. Is this an extension item?

Mr. LIVINGSTON. Yes, sir; it applies to the cooperative work carried on by the Federal Bureau of Markets in cooperation with the extension divisions of agricultural colleges, State bureaus of markets, agricultural colleges doing investigational work, etc. It provides for the joint employment of men for any one of these three lines of work. At the present time there are 41 men so employed.

Mr. ANDERSON. Is this an instruction course in colleges?

Mr. LIVINGSTON. No, sir. This is done through investigational work, where a problem is taken up for investigation by a State, or, in the case of extension work, by a man employed jointly by the State and by the Federal Bureau of Markets.

Mr. ANDERSON. Where is the extension work done?

Mr. LIVINGSTON. It is done in the States.

Mr. ANDERSON. It must be done in a State somewhere, but what I mean is whether it is done at a college or done in the country.

Mr. LIVINGSTON. It is done out in the country.

Mr. ANDERSON. What is the purpose of it? Is it to teach the people how to dispose of their products?

Mr. LIVINGSTON. Yes, sir; it is generally to extend the work of the Bureau of Markets and the State institutions to the people in the country.

For instance, during the last fiscal year the field agents of the Bureau of Markets and the State institutions assisted producers to form 380 purchasing and marketing associations. Of this number, 50 were live-stock shippers' associations, 57 fruit and vegetable, and so on.

Mr. ANDERSON. The same thing, apparently, is done under a half dozen different items, and what I am driving at is the necessity for having so many different items. Is it not possible to do all of this work under one item instead of doing it under a half dozen?

Mr. LIVINGSTON. The only other item where there is any cooperative work between the Bureau of Markets and the States is in connection with the cotton demonstration work in the South.

Mr. BYRNES. The question is whether similar work is not being done by the extension bureaus.

Mr. LIVINGSTON. It is; they put most of the money into it. They want their men to be attached to our organization in order that they may have direct access to the information we have in the Washington office. We keep in close contact with those State agents by mail, and they call upon us for specific information. Through these cooperative arrangements we have a sort of connecting link between the State institutions and the Federal Bureau of Markets.

Mr. ANDERSON. Mr. Wason just asked me if I knew who the man was in Minnesota. I asked the Minnesota department of agriculture some time ago what cooperative projects they had with the Department of Agriculture, and my recollection is they said the only cooperation they had was with the Bureau of Markets.

Mr. LIVINGSTON. I do not know whether that is the only cooperation or not, but in Minnesota we are cooperating with the State

department of agriculture and the college. In some States we have two men. For instance, in the State of Ohio we have two men jointly employed, one of them with the State bureau of markets and the other with the agricultural college, dealing with the extension work. In some States there are two or three institutions dealing with marketing work, and we cooperate with one or all, as the funds will permit and as the State institutions decide among themselves as to what is the best policy for the State.

Mr. WASON. Let me see if I understand these figures which have just been handed me. For instance, we will take the State of New Hampshire. The total funds used for marketing work amount to \$3,100. The amount of funds contributed by the State is \$2,500 and the amount contributed by the Bureau of Markets, which is your department, is \$600.

Mr. LIVINGSTON. Yes, sir.

Mr. WASON. That man is employed in connection with the extension work of the State college?

Mr. LIVINGSTON. No; that man is at the State bureau of markets.

Mr. WASON. Mr. Farmer was the man there, and I believe Mr. Davis is there now.

Mr. LIVINGSTON. Yes, sir.

Mr. WASON. The State does not contribute anything, except to pay this man's salary for his work?

Mr. LIVINGSTON. They pay his salary and traveling expenses within the State.

Mr. WASON. I understand; but that is a State office.

Mr. LIVINGSTON. Yes, sir.

Mr. WASON. And you contribute \$600?

Mr. LIVINGSTON. To his salary.

Mr. WASON. Yes; toward his salary.

Mr. LIVINGSTON. He is a joint employee.

Mr. WASON. Then he gets \$3,100, does he?

Mr. LIVINGSTON. I do not know whether that represents his salary or not.

Mr. BYRNES. That probably represents his salary and expenses.

Mr. LIVINGSTON. We pay \$600 toward his salary.

Mr. WASON. Does he report to you?

Mr. LIVINGSTON. Yes, sir.

Mr. WASON. Some day when I have the leisure, if I should come up to your office, could I see his reports?

Mr. LIVINGSTON. Yes, sir.

Mr. BYRNES. I notice South Carolina has \$11,000, and I presume that is divided among several employees. The State contributes \$9,000.

Mr. LIVINGSTON. We have two men there.

Mr. ANDERSON. It seems to me the whole thing is on such an indefinite basis still that effective work along this line is exceedingly difficult.

Mr. LIVINGSTON. It is exceedingly difficult, but a great deal has been accomplished because the demand upon the State institutions for marketing work and marketing information is increasing as the days go by, and they are very insistent on our giving them all the help we can. They feel that by having a man in their organization who is a joint employee of their organization and ours, they have

more immediate and direct contact with our bureau, and that they have better access to the information we have available.

Mr. WASON. Let me ask you a question that exists. In one of the central counties of New Hampshire, which is a small State in area, there are quite a large number of beef cattle grown, according to the acreage. Suppose my friend, Mr. Blank, who raises quite a number of beef cattle for market wanted to know something about marketing conditions and should telephone or write or send to Mr. Farmer or whoever was connected with the office in Concord as to when would be a ripe time to market a couple carloads of beef cattle, what information could this man give him?

Mr. LIVINGSTON. That would depend very largely upon the man, upon his ability and judgment and the information he had. I should say what he would do would be to make available to this particular man all the information he had on the beef-cattle situation. If he happened to be a student of live-stock marketing and kept in close touch with live-stock affairs, studying price trends and receipts and things that are influencing prices, he might be able to lay before this man some information he did not already have; but I should not expect him to tell the man to ship his cattle at a certain definite period. I should think that would be a risky thing for him to do because his judgment might err and he would consequently be held responsible for giving erroneous information.

Mr. WASON. Then we will turn from live stock to any other commodity—vegetables or anything of that sort. What information can this bureau in Concord give the farmer out in the county that he does not have himself, if he is an intelligent farmer?

Mr. LIVINGSTON. The difficulty with this kind of work is just the thing you have alluded to, its very broad nature, and it covers so many commodities that it is impossible to expect one man in a State to be an expert in marketing cotton and live stock and wool and all the other commodities.

Mr. WASON. We do not grow any cotton. We have to buy our cotton.

Mr. LIVINGSTON. It is difficult for one man to keep fully posted on the marketing of all commodities, and consequently most of the activities of these agents have been confined to assisting in organizing local associations and things of that sort which are of a specific rather than a general character.

Mr. WASON. To revert to the beeves, does not the price of beef in Brighton, which is the market for New Hampshire, depend upon the incoming beeves from the West?

Mr. LIVINGSTON. I should think that the local market would be in entire sympathy with the cattle market generally.

Mr. WASON. Is it not absolutely controlled by Chicago, practically speaking?

Mr. LIVINGSTON. I should think it would be in the long run: yes, sir.

Mr. WASON. Can this agent at Concord have any inside information that is of any benefit to the farmer up in one of those central counties as to what the probable situation will be in that market next week?

Mr. LIVINGSTON. I should say that he probably would not have any inside information, but he might have more information than

the individual farmer would have. This whole marketing problem seems to be a matter of getting reliable information and making it available to the individual who can use it. I would not say that the agent in New Hampshire would be able to present to the individual shipper any information that was not generally known.

Mr. WASON. Would he be in a position to give him the amount of meats and products of the beeves which are in storage in Boston and vicinity, which is the central point for that market; would he be able to give him information about the quantity in transit from Chicago, etc.?

Mr. LIVINGSTON. Yes, sir; from our live-stock reports he would be able to give him a very good picture of the exact situation that day. From the cold-storage reports he would be able to know—

Mr. WASON (interposing). Does he have those reports daily, so he could do that?

Mr. LIVINGSTON. No; the cold-storage reports, of course, are not put out daily. They are put out monthly.

Mr. WASON. I think your predecessor answered me once that one of the benefits of this service would be to inform the Boston market, which would be reflected in my State, if there was an accident—a derailment of a train of refrigerator cars at Rotterdam Junction moving eastward—and he gave the impression, although he finally backed out of it, that that would affect the price of meat in the Boston market. I am wondering if you have any similar conception about that.

Mr. LIVINGSTON. No; I should say that he evidently was discussing a different item from this. I should say that this State agent in your State could help the individual producer in the State only by giving to the producer information which he did not already have. Perhaps, it would be only a question of telling him where he could get it. For instance, he would tell him he could get the Market Reporter, giving the market reports from Boston, or call his attention to other available information.

Mr. WASON. He could read that in the Boston papers, could he not?

Mr. LIVINGSTON. Yes, sir; he could read part of it.

Mr. WASON. What are your requirements along expert lines for these positions?

Mr. LIVINGSTON. These men, I may say, are selected pretty largely by the State and approved by the Bureau of Markets. We have no rigid requirements which we impose upon the State. We look upon this pretty largely as a State enterprise and not as a Bureau of Markets enterprise.

Mr. WASON. Do you send out any regulations to govern the State officials, requiring the appointment of persons with certain qualifications?

Mr. LIVINGSTON. They select the man, submit his record and qualifications to us, and we consider them, and if we feel we can approve it we do so, and if not we tell them so and they immediately look for some one else. As I indicated, the selection of the men is very largely a State matter.

Mr. ANDERSON. How much of this fund is spent for the payment of salaries of persons employed by the States?

Mr. LIVINGSTON. Almost all of it. Almost all of it is spent in the employment of men, a part of whose salary is paid from this fund and a part of it from other funds available to the States.

FOR HANDLING, GRADING, AND TRANSPORTATION OF GRAIN SORGHUMS, FOR
THE PURPOSE OF FIXING GRADES.

Mr. ANDERSON. Take up item 83.

Mr. LIVINGSTON. Item 83 is the grain standardization item. There is no increase asked for in this item. The work during the past year has been largely that of preparing standards for rye and grain sorghums, which are now almost completed and ready for promulgation. The work for next year will be on barley and flaxseed.

Mr. ANDERSON. How extensive is this sorghum business?

Mr. LIVINGSTON. The sorghum business is a very important factor in grain marketing as a whole. The increase in the production of grain sorghum has developed very rapidly in the past 10 years. It is now a very important crop in the central Southwest, from Kansas south.

Mr. ANDERSON. Is there any authority for promulgating these standards now?

Mr. LIVINGSTON. Yes, sir; under the grain standards act. The investigational work is done under this item, and when the investigational work has been completed and the standards have been perfected so far as we are able to perfect them tentatively, they are announced for the purpose of hearings under the grain standards act, and after hearings have been held under the grain standards act they are promulgated and fixed under the authority contained in that act. In other words, no money appropriated under the grain standards act is used for investigational work but is used only for the enforcement of those standards which have already been fixed. The investigational work carried on under this item to some extent also is a continuation of investigations relating to standards already fixed, with the purpose in view of changing them to more nearly perfect standards. This, of course, is something very hard to attain, but as experience indicates, we carry on certain investigations to determine whether existing standards are satisfactory or whether or not they should be modified. At present this money is used primarily to get information on which to base standards for grain sorghums, rye, barley, and flaxseed. Rice standards were promulgated last year but have not been enforced.

Mr. ANDERSON. That is what I was looking for. I thought I had seen somewhere, either in your report or elsewhere, a statement that standardization work was being done on rice and several other products which seemed to me of relatively less importance, and I am just wondering how far this standardization is going to go.

Mr. LIVINGSTON. This will complete the standardization work so far as initial determination of standards is concerned on grains.

Mr. ANDERSON. This year?

Mr. LIVINGSTON. No.

Mr. ANDERSON. During the next fiscal year?

Mr. LIVINGSTON. No. We will have completed standardization work on grains, so far as initial standards are concerned, when we

have determined standards for grain sorghums, rye, barley, and flaxseed.

Mr. ANDERSON. When will that be?

Mr. LIVINGSTON. We will have standards for grain sorghums and rye at the beginning of the next fiscal year. The question of standardizing barley and flaxseed is a difficult one and probably will take more than this fiscal year.

Mr. ANDERSON. It would seem that as you progress with this work it ought to be possible to reduce this appropriation.

Mr. LIVINGSTON. I think we will have a suggestion on that point to make next year.

Mr. WASON. You could not possibly give us one this year, could you?

Mr. LIVINGSTON. It is just one year too early. We do not want to delay this work because there is so much demand for standards for these commodities and it would be necessary for us to reduce our force and thereby delay the work and string it over a longer period of time, whereas if we have this money, we can push the work forward and get out these standards more promptly, and then if funds are available, make them effective under the Grain Standards Act, and enforce them as we are now enforcing the standards on corn, oats, and wheat.

COLLECTING AND DISSEMINATING INFORMATION CONCERNING THE FOREIGN MARKET SERVICE.

Mr. ANDERSON. Take up the next item.

Mr. LIVINGSTON. The next item is No. 84, which is a new item for the foreign-market service. While there is an apparent increase of \$100,000, there is an actual increase of \$67,100, due to a transfer from the lump fund, item 74. I would like to have the committee hear Mr. Montgomery and Mr. Estabrook on this item.

Mr. ANDERSON. Mr. Livingston, we will take up item 84 again.

Mr. LIVINGSTON. I would like to have the committee hear Mr. Montgomery on this item.

Mr. ANDERSON. Mr. Montgomery, unless you have in your mind some way that you want to present this matter, personally I would like to have you tell us, first, what you have already done in the South American proposition and just what you propose to do.

GENERAL STATEMENT.

Mr. MONTGOMERY. The work we have been doing on this foreign market project covers about three things. We have been doing a great deal of statistical work, largely in reply to inquiries for information about foreign marketing, trade in agricultural products, to supplies going and coming, etc. I should judge that perhaps half the energies of the department have been consumed in preparing statistical data of this kind for all sorts of inquiries from a good many of the commercial firms that are dealing in agricultural commodities, and a great deal of demand has come to us from the representatives of farmers' cooperative organizations that really have no other way of getting information as to foreign trade on those commodities, except to have some one prepare it for them.

We did not see how they could get it if we did not prepare it, so we have used our statistical force to answer those inquiries and prepare a great deal of data. I can show you the material we have prepared, and as a line of inquiries come up we try to prepare the basic data. For example, ever since the break in the price of wool there have been inquiries as to the world trade in wool. So we prepared practically a complete statement of the international trade in wool from all countries.

Mr. ANDERSON. Where do you get that information?

Mr. MONTGOMERY. We take that, of course, from the reports of the Bureau of Foreign and Domestic Commerce and from the yearbook of the foreign countries; that is, if we have to get the imports in England we have to use the English books, and for France we have to use the French books, and so on for each country. The information in our own country gives the exports that go out and the distribution, but that information does not show what the other countries receive from all sources. So we have to use the statistical resources of all countries. Then we have had a very heavy inquiry ever since last March on dairy products. It began with the break in the price of condensed milk.

Of course, we built up an enormous trade in dairy products during the war, and we have prepared all the basic data bearing on dairy products, of course using foreign publications for most of it, and so on with the different commodities. We are now working on the live stock and meat situation, the world cotton situation, and so on. I will not take up your time to look at these sheets, but here is the complete statement, as nearly as I can work it up, on the foreign trade in both imports and exports, and reexports of foreign goods into the United States, for the last 10 years, so as to give a picture of it.

Mr. ANDERSON. Is not all of that information now available in the Department of Commerce?

Mr. MONTGOMERY. Yes; we get it from the books of the Department of Commerce.

Mr. ANDERSON. What is the use of doing it twice?

Mr. MONTGOMERY. In their work it is not analyzed from an agricultural point of view. For example, the data on the wool situation is available to the wool growers' associations from commerce reports, but it seems that our analysis of it was very helpful to them, because we analyzed it from the viewpoint of the wool growers and wool handlers.

Mr. ANDERSON. The information as to imports and exports is the same information, no matter who handles it. I do not know what your point of view is, and what I am trying to find out is whether you are doing something that is already being done or whether the thing you are doing is something that is not being done.

Mr. MONTGOMERY. I do not think that it is done; I do not know any place where data for 10 years is put together; if it had been done we would have gotten it and would not have done it ourselves. For example, that data shows what the effect of the war was on every given item. We could take breadstuffs there and trace them through for 10 years and show how they went up during the war and dropped back again or how they are beginning to drop back now.

Mr. ANDERSON. The significant thing about this is that you have tabulated it for 10 years instead of three years, as is tabulated by the Department of Commerce.

Mr. MONTGOMERY. Yes; and we have tabulations for 20 years. For example, we made one study, and it is the only one I have seen, on the effect of the war on the exports of agricultural products. We went through and analyzed it carefully, and we found that foodstuffs were about the only thing that increased in tonnage during the war, breadstuffs first and then meats.

Mr. ANDERSON. But the tonnage of steel and other commodities of that kind increased to a greater extent?

Mr. MONTGOMERY. Yes; but, of course, those are not agricultural. I am thinking of agricultural products. Take the case of cotton. There was a great decrease in the exporting of cotton during the war in tonnage. Then, in analyzing meats we wanted to find out what meats were in demand, and we found the variety was not large; we found it was bacon and ham as well as frozen beef largely; that is where practically all the increase in meats comes in. The exports of lard really decreased and the exports of many other meat products decreased during the war.

Mr. ANDERSON. Is this statement on a tonnage basis or on a money basis, or both?

Mr. MONTGOMERY. This is on a tonnage basis; and it is the only analysis I know of that has ever been made on a tonnage basis. We have found that a money basis did not mean anything simply because the price was going up. For example, on the exports of cotton we showed an enormous increase, pretty nearly three times as much cotton on the money basis during the war. That curve goes up rapidly on the money basis, but on the tonnage basis it goes down during the whole period of the war.

Now, what does that mean to the cotton grower—and that is what he wants to know, because his production is based on tonnage—and it was very surprising to me to find that the European consumption of cotton was less and that our exports of cotton declined steadily all during the war period, ever since 1915, although the exports in money value have gone up steadily. We found that true in our analysis of the tonnage basis right straight through—that the money figures were entirely deceiving as to the export trade.

Mr. BYRNES. Do you make that kind of an investigation?

Mr. MONTGOMERY. Yes; ours is all based on tonnage.

Mr. BYRNES. But there are other agencies making similar investigations, are there not? What I mean is that figures are published by the department as to the number of bales exported.

Mr. MONTGOMERY. Yes.

Mr. BYRNES. Those figures are not ascertained by your department, are they?

Mr. MONTGOMERY. No.

Mr. BYRNES. Then exactly what are you doing?

Mr. MONTGOMERY. Well, in the case of the Census Bureau they give from month to month the bales that are exported.

Mr. BYRNES. That gives to the farmer the information he wants, does it not?

Mr. MONTGOMERY. Yes; but this is an analysis covering 10 years, showing the effect of the war on that period. We have had frequent requests for this information and that is the reason we worked it up. I suppose they could do it some place else, but this is basic data, and all we have put up here was only worked up when we found we had a lot of requests along that line. We did it in order to save repetition. As a matter of fact, this is only a small part of the work, and I simply cited it to show that we have worked out, when the requests became numerous enough, the basic data, and then we can answer them. For example, only day before yesterday we had a request, I think, from Mr. Haugen, for an analysis of the export trade in agricultural products, and fortunately we were able to furnish the whole thing on a minute's notice.

Mr. WASON. That was for the purpose of making a speech, was it not?

Mr. MONTGOMERY. I suppose so. But it takes a good while to work such information up, and these statistics have been worked up because of requests that have come in. That is one thing we have been trying to do. I suppose some other agency could do it, but I think I can illustrate the reason why we are able to do it in a more satisfactory way by this fact: There have been a great many requests lately for information about the imports of Canadian wheat into this country. Now, that same data could be taken, of course, from commerce figures without analysis, but the people making these inquiries want information as to what those figures mean. In the Bureau of Markets I think I am able to give a pretty good angle on that, because we have grain specialists and a good many of the men have been in the grain trade themselves for 10 or 15 years, and they see it from the commercial point of view, the grain handler, and then, of course, we see it from the farmer's viewpoint, and we can usually make an analysis and interpretation of those figures, and that means a good deal more to the grain trade or the farmers than by submitting to them bare figures. It is our interpretation rather than the bare figures that the people who ask us questions want; they say they do not care whether we give them figures at all if we give them an interpretation.

The other phase of work along this line that we have been trying to do in a statistical way is to see if we can work out a scheme—by the way, you might be interested in these two curves on cotton. That curve shows the exports of cotton in tonnage and the one on the next page shows the exports expressed in dollars for 10 years.

Mr. BYRNES. You have not carried on this chart the exports and imports of cotton for the year 1920?

Mr. MONTGOMERY. No; that information is not available yet, except up to the 1st of December.

Mr. BYRNES. This chart does not show that.

Mr. MONTGOMERY. We have the data but those charts have not been extended. I have charts here on meat and peanuts, etc., during the same period.

COMMODITY STATISTICS.

I want to speak briefly about the other line of statistical work and that is an attempt to see if we can get out, at regular periods, a re-

port on the world situation in regard to the large commodities. Now, we think that prices are fixed by the world price levels for these commodities and that the public has very little information as to the trend of the world supply and demand until after the thing happens, as a rule a year or two after or after the price break takes place. Of course, we generally make an explanation as to why it took place, but in marketing we have a different problem; we want to know some time beforehand what the trend of events is, whether the trend is up or whether the trend is down, and of course that is a very difficult thing to determine. But that is the problem in marketing; it is not to record history but to summarize the situation in such a way that it gives a slant on the future development of the market, whether the demand is likely to increase or decrease, or whether the production is going to increase or decrease.

The thing I have been trying to work out is to see whether we could issue statements on the world situation, we will say, for cereal production, wool or cotton, which would indicate what the probable world supply is, as well as the demand, and what the trend is for the next year or six months. The first attempt was on the wool situation. That was begun along last April, and I have here a statement of the world wool situation which I think explains the break in the world wool market. We were able to find out through cabling the embassies and the countries producing a commercial surplus and through other sources that there was about a year and a half's supply of wool in sight where ordinarily there should be about an eight months' supply of wool in sight, and I think that adequately accounts for the low price, and it indicates that until it is absorbed we will have a surplus of wool. We have also tried to find out what the consumption of Europe was. This surplus has largely accumulated since the war, due to the fact that Europe is not consuming wool and it will not consume wool until it can afford to buy it, and that shows a long time trend. The important thing to watch in the wool market is the ability of Europe to come back to the prewar consumption of wool, and you can figure that out as a five or ten years' proposition. The same thing we found in cotton.

In the world cereal situation, which is summarized here, we found there was not an oversupply of breadstuffs, but we did find the same thing we found as to wool, namely, that Europe is not consuming a normal quantity of breadstuffs, and they are not importing nearly as much as they would like. We can not judge them by their needs but must judge them by what they can pay for. That is making a poor world market for exports. I think those two articles indicate what can be done along that line if we can build up machinery for keeping track not only of potential supplies in different parts of the world but the machinery also, which is just as important to determine the buying power of our main customer, and that is Europe, almost entirely. I will not go into that, but I might mention another interesting angle on that buying power. We have a complete statement now of the consumption of butter and oleomargarine in England. We find that England is importing about one-third as much butter as she was before the war, but she is increasing oleomargarine production to offset it; that is, they have changed from butter to oleomargarine. That is of very great importance to all countries exporting butter and accounts, too, for

the reason why we get some Danish butter in this country, where England always consumed it before. I think we can build up a service along that line which will give the long-time trend of consumption and production of these main commodities, and from the marketing viewpoint that is what is wanted.

Mr. ANDERSON. I think the question which is in the minds of the committee about this work is whether it does not belong to the Department of Commerce, but I do not suppose you know any more about that than we do. It is natural to assume that the department which is collecting the greatest portion of this information is the department which ought to put it in such shape as to make it useful for the people of the country who want to make use of it.

Mr. LIVINGSTON. These figures on agricultural products are not all collected by the Department of Commerce. The Department of Commerce is only one source of information: we get information from many other sources. The Department of Commerce furnishes the statistics on our domestic situation, and we are obliged to go to these other countries and get information from the other countries. Moreover, the Department of Commerce, aside from the purely statistical collection of agricultural exports and imports, is dealing almost entirely with commodities other than agricultural.

Mr. ANDERSON. It simply collates and puts together the figures which it gets in the ordinary course of regulating exports and imports and the collection of duties, etc., does it not?

Mr. LIVINGSTON. My understanding is that most of these figures are collected, as a matter of fact, by the Treasury Department, by the customs officials of the Treasury Department, and that the Department of Commerce simply puts them out in the course of regular events, but they make no attempt to interpret them; it is simply a matter of issuing the figures, and, as I indicated, the Department of Commerce is dealing almost entirely with commercial products other than those of agriculture. We have a general understanding with the Department of Commerce that the agricultural part of the work is a function for the Department of Agriculture and have been working with that understanding both in cooperation with the Department of Commerce and with the Department of State. The Department of Agriculture is represented on the economic liaison committee which meets weekly to consider foreign trade questions in general, and through that committee a plan of keeping in touch with the whole situation and prevention of duplication is gradually being worked out.

Mr. HARRISON. You might tell the members of the committee what that committee is. It may not have heard of it before—the economic liaison committee.

Mr. WASON. I do not know whether Mr. Anderson has heard about it, but some of us have, and we have seen some of the fruits of its work.

Mr. HARRISON. It is composed of representatives of all departments which have any relation to foreign trade. Mr. Montgomery is our representative on the committee, and, as Mr. Livingston says, it meets weekly for the purpose of discussing the different problems which are up at the time.

Mr. WASON. But here is the point: The Department of Commerce is asking Congress to appropriate hundreds of thousands of dollars

for specially trained men, as they claim, to go to all parts of the world to look after our foreign trade; to put it as they want it put; to go out and see where they can find a market for grain products and other products. Are they not doing that?

Mr. LIVINGSTON. I think they are. Their interests, however, up to this time have not been agricultural products but commercial products.

Mr. WASON. I noticed that, and I will ask you what particular agricultural products raised by the farmers are exported by the farmers other than cotton.

Mr. LIVINGSTON. Wheat.

Mr. WASON. And does the farmer expect that?

Mr. LIVINGSTON. It makes no difference whether the farmer exports it or not.

Mr. WASON. I beg to differ with you. Why do you not say beef instead of wheat?

Mr. LIVINGSTON. We do export some beef.

Mr. WASON. Who controls the beef prices of the world—the farmer?

Mr. LIVINGSTON. The beef prices of the world are controlled by the law of supply and demand.

Mr. WASON. Who controls the prices of the wheat of the world?

Mr. LIVINGSTON. The law of supply and demand affects that, too.

Mr. WASON. No. Does not Liverpool fix those prices?

Mr. LIVINGSTON. Liverpool simply registers what the demand and supply is.

Mr. WASON. Do they not fix the prices?

Mr. LIVINGSTON. I would have to ask you to define the word "fix"? If you will do that, I can perhaps answer your question.

Mr. WASON. Does not Liverpool absolutely fix those prices?

Mr. LIVINGSTON. No. I think that simply because Europe is the large consuming market that the surplus of the world accumulates directly or indirectly in Liverpool, and that the prices in Liverpool are reflected back into all producing countries, but that does not compare with the ordinary understanding of the word "fix."

Mr. WASON. What I am getting at is this: Is there a single product that this country exports exported by the farmers themselves?

Mr. LIVINGSTON. I think the farmers export fruits to a very large extent.

Mr. WASON. What kind of fruits?

Mr. LIVINGSTON. Apples and citrus fruits.

Mr. WASON. Is there not a middleman who does the exporting?

Mr. LIVINGSTON. In some cases, but just now there is a movement toward the development of cooperative organizations which will engage in export work. As an illustration, the Canadian grain growers have a definite organization which devotes itself entirely to the export trade.

Mr. ANDERSON. It seems the question gets down to this, or eventually will come to this: The Department of Commerce is going to send its agents into foreign fields in so far as they can get the money to do it, and that being so is it necessary to send another set of agents into the foreign countries in order to ascertain the prospective and existing markets for agricultural products?

Mr. HARRISON. May Mr. Estabrook answer that question? He has just returned from Europe.

Mr. ANDERSON. I do not care who answers it.

Mr. ESTABROOK. I might say that the Bureau of Crop Estimates, which preceded the Bureau of Markets by many, many years, has accumulated the most complete collection of agricultural statistics in the world; by reason of that fact that the statistical bureau of the department has had correspondence coming to it through all these years, and even up until the present time, for data on the world situation, we have paid more or less attention to it. It is only recently that the Bureau of Markets has been studying the foreign field and largely taken over that work; but for a long time we have felt the need, and especially during the war, of having some machinery to collect information promptly as to production and prospective production and the demand in foreign countries.

We had three or four sources of information, which were the only ones in existence. One was the International Institute of Agriculture at Rome, which was organized primarily to supply that information. The others are the Governments themselves, all of which gather more or less information on their production and consumption; but the Government reports are very slow in process of forming and very slow in reaching us, sometimes months and months after the crops have been harvested and gone into consumption. That has impressed upon us the necessity of getting information more quickly. The International Institute of Agriculture deals only with governments; it does not collect any information on its own account. It simply bases the international statistics on information turned over to it by the adhering governments. We need men in those countries of surplus production in competition with the United States who are watching the course of things, who are getting statistical data which is available, and to pick up a lot of information on their own account and to get it to us by cable—not wait for the slow process of getting it through the International Institute of Agriculture at Rome. Our interest has been with respect to the supply, in order to estimate production, which is the equivalent of supply of agricultural products, as gathered in the foreign field and also with respect to the relative demand for those products.

Recently I was sent to Europe to try to get some information on the probable market demand for these great surplus commodities of ours, because the price has fallen far below the cost of production, and it is a tremendously serious matter to agriculture in this country, and incidentally I called upon all the officials who were available, including the consular agents and the commercial attachés. I wanted to see for myself how much those men knew about American agriculture. Not one of them professed to know anything about it. They seemed to be concerned in finding a market for automobiles, textiles, and other manufactured products more than anything else, and why? Because, back of them is an enterprising business agency that is spurring them on and demanding information. Organized agriculture is not represented abroad in the same way as organized business, as it should be.

Mr. ANDERSON. Do you think that we can go out and duplicate all of the commercial attachés for the purpose of getting agricultural information?

Mr. ESTABROOK. I think it would be a splendid investment; yes, sir; I think it would be worth while. I think the crop production of the United States is sufficiently large to justify that expenditure, and it is important for the reason that, just as Mr. Wason hinted at, the price of wheat is influenced very largely by its price in the Liverpool market; and so with cotton and other things. The bulk of our commodities are consumed in this country—we are our own best customer—but nevertheless the price which the producer gets is very largely influenced by conditions abroad. Therefore, we ought to have the most complete, definite, and timely information on the supply and demand situation of those commodities. I do not believe that we will get it through men who are commercially trained and who have not the insight into American agriculture which is required.

Mr. WASON. Would not this accomplish what you have in mind, be less expensive, and, perhaps, equally effective? If we increased the personnel of our foreign commissioners under the ambassadors by requiring that they be specialists in agriculture, to be designated as such, and to keep watch on conditions in the countries where we have ambassadors?

Mr. ESTABROOK. That would be a great help, but I feel that we would get better results if they were in closer touch with organized agricultural agencies.

Mr. WASON. Suppose we required that the Secretary of Agriculture should recommend three men from whom one should be selected and be given the position by the Secretary of State or the President?

Mr. ESTABROOK. That might be done. It might function all right.

Mr. BYRNES. I do not follow you in one thing. You contend that these men can not secure the statistics because they are not in close touch with agriculture, the present governmental employees who are engaged in this work in Europe. Is that your contention?

Mr. ESTABROOK. It is partly that. In order to get the statistics that are of any use you have got to know what to look for and you have got to know how to interpret the information after it is obtained. It requires a certain amount of familiarity with the subject.

Mr. BYRNES. Would not that require that a man be a specialist for the automobile and trained specialists for the various other enterprises that require some special knowledge? I do not agree with you. I take it for granted that you have engaged in the work here some man who has not been a practical farmer, and if he has been, if he has been engaged in growing cotton, he does not know much about the growing of the crops of the Northwest, and yet I believe that he could gather statistics which would be of value.

Mr. ESTABROOK. Most all of us have been practical farmers. That is one of the requirements of the Bureau of Crop Estimates, that we will not take city men, because it would take years and years for them to get in touch with the agricultural situation.

Mr. BYRNES. Say that he has been a woolgrower or that he comes from that section, he does not know much about the fruits and vegetables of Florida. He is not a specialist in the production of fruits and vegetables. I do not follow you in believing that every industry must have a specialist over there.

Mr. ESTABROOK. I do not think it is necessary for every industry.

Mr. HARRISON. The difference between industry and agriculture—

Mr. BYRNES (interposing). That is based on special knowledge?

Mr. HARRISON. Of agriculture.

Mr. ESTABROOK. Take the other industries, the steel industry, the shoe industry, the textile industry. They have live agents over there.

Mr. BYRNES. Each one has?

Mr. ESTABROOK. Yes, sir. They do not need these commercial attachés like agriculture needs them.

Mr. BYRNES. I agree with you. I do not see why you can not have a man to gather statistics as to industries and agricultural products?

Mr. ESTABROOK. We want a man to do something more than gather statistics. He has to have head enough to understand the economic situation as well as the agricultural situation. He has got to understand the importance of things and he has to be able to appreciate the significance of the information he gets. I would not want to depend on an automobile salesman to estimate crop or live-stock production. He simply could not do it.

Mr. BYRNES. I would be willing to take you as a specialist in agriculture and have you gather statistics as to the automobile industry and other industries, and I grant that you would be able to do so, and I would be willing to risk a man who has been specializing in industry to acquire some information as to agricultural conditions.

Mr. ANDERSON. There is very little in the way of agricultural products exported except in their natural state. Our exports of wheat, according to the statistics, in 1910 were down to about 8,000,000 bushels and in 1913, 40,000,000 bushels. That does not amount to anything compared with the total. You export a good deal of cotton, but relatively the exports of raw products are comparatively small.

Mr. MONTGOMERY. About 50 per cent exports and 62 per cent of imports are agricultural products.

Mr. ANDERSON. When you say agricultural products, what do you mean?

Mr. MONTGOMERY. That classification covers them.

Mr. WASON. Does that cover the breadstuffs?

Mr. MONTGOMERY. Yes, sir.

Mr. ESTABROOK. At the meeting of the general assembly of the International Institute of Agriculture in November there was present a representative from the American Farm Bureau Federation, formerly president of the Illinois Agricultural Association, and as representing those organizations he was advocating this very thing—the establishment of agricultural attachés in the various foreign countries.

Mr. BYRNES. I suppose they could accomplish a great deal of good, but that would necessitate having a duplication of agents over there.

Mr. ESTABROOK. The point I was making and, perhaps, the only point that I arose to make, was this: The present men they have there, the present consular officers and the commercial attachés who are now on the ground, do not know the first thing about American

agriculture. They do not know that we have any burdensome surpluses, which have to be marketed, which must be moved in order to relieve this ruinous price situation.

Mr. BYRNES. I suppose that is true.

Mr. WASON. Has the Secretary of State written any of his assistants asking that they furnish this information and to investigate and see what relief they could devise?

Mr. ESTABROOK. I do not know that he has.

Mr. ANDERSON. Has there ever been any attempt made to get this information through the consular service?

Mr. ESTABROOK. No.

Mr. LIVINGSTON. Mr. Montgomery will submit to you just what we are developing and planning for this service and the agencies already involved in the cooperative arrangement.

Mr. MONTGOMERY. I have been thinking the matter over. I have talked with the State Department people and some others about it. I think we all recognize that in order to get information of a certain kind a man has to know his business. I can illustrate it in a very concrete way. We were sending down to South America a man on the live-stock business. The representatives of the hog-breeding association came to us and very strongly protested, because they said the man knew cattle but did not know hogs. That man had spent his life in the cattle business, but he said that he could not—that he knew all about pure-bred cattle but he did not know about pure-bred hogs—and we had to pick a hog specialist. That seems to bring this point out. I think it is fair to say that no man can size up the agricultural situation and get the information that we want who is not in very close touch with it.

Mr. ANDERSON. When a man gets to be a specialist he does not know anything about anything else. That is the history of it. If you are going to send specialists over there, men who are specialists in particular subjects, you can not expect them to interest themselves in anything else, because they will not do that.

Mr. MONTGOMERY. We do not want to duplicate anything in the consular or commercial services, but we thought that if we could put a few agents over there, men who had been originally agriculturists, they could cooperate with the Consular Service and get the information and forward it to us. I think we would get a great deal of information from those people if somebody who was familiar with the question directly should ask them to get it, somebody who knows what is wanted.

Mr. ANDERSON. I am in entire sympathy with the idea of getting this information as to the foreign markets. I think it is something that should have been done long ago. If there was one thing we learned during the war it was that you could not get very much about the prices of commodities unless you undertook to get the information on the war basis.

Mr. MONTGOMERY. That is true.

Mr. ANDERSON. I am entirely in sympathy with the idea of getting that information, but the instrumentalities which exist so far as they can be used are going to be; we are not going to duplicate any governmental agency with an agricultural expert on foreign markets.

Mr. MONTGOMERY. In this plan we have only called for six or seven, one in the Mediterranean district that knows the Mediterranean prod-

ucts, because we get there a lot of citrus fruits and onions, a lot of things that come in competition with our citrus fruits, prunes, raisins, and such things—that is, only things that are shipped into this country from the Mediterranean district with which we have to compete. There are in the Mediterranean district some 25 or 30 representatives of the State and Commerce Departments. I think the man in that section who got acquainted with all of these men and directed them from time to time as to what we wanted them to collect for us could keep us informed. For example, they want to know what the prospective Italian lemon crop is. We have that request a good many times from California. We ought to know that every year—it ought to be sized up two or three times a year, because it comes in direct competition with the American product, largely on the Atlantic coast. There is not a consul over there who knows much about lemons.

The California people sent a representative to Europe this year, a specialist in that line, to find out. If an agriculturalist would outline to the State Department consuls in the lemon-producing centers; if he could direct them to collect and get information on lemons, their probable movement and the movement of citrous fruits and the by-products, that would be of a great deal of use to our citrous producers.

We want to put one man in the Mediterranean district, one man in North Europe, to cover five or six countries of North Europe, then we want at least two men in South America, one to keep us posted on the developments of the live-stock industry and also to promote trade for pure-bred live stock.

Mr. ANDERSON. Have you not one?

Mr. MONTGOMERY. We have one we expect to send the 1st of February.

Mr. ANDERSON. I had the idea that we were aiming to have one during the coming year.

Mr. MONTGOMERY. We sent two men for about three months; one on hogs and one on cattle.

Mr. HARRISON. The matter was discussed before the committee last year and an item of \$25,000 was inserted for the employment of two live-stock commissioners in South America, but it was later omitted from the bill. The item did not carry any extra appropriation; it simply authorized the use of \$25,000 of the existing appropriation for that purpose.

Mr. MONTGOMERY. We should have men in South America for a part of the year to keep us informed thoroughly of the development of the grain crop, so that we can keep our people posted, because that crop has a direct effect on the prices of grain during the winter months here. We need another man in Australia and New Zealand, and we think that we need another man in the Orient. We could transfer our grain men from South America and the East to the Balkan States and Russia during the growing season—that is, from spring to harvest—in that section to keep us posted of the developments in that section. When Russia comes back it is going to be the greatest factor in the next 10 years, with its low-priced products. Those things we have to watch for our farmers and the trade, which is very much interested, because they have no authentic reports from South America and Australia now. Large operators get some private information from their own people.

We think that we can establish a service that will give weather and crop reports on the Southern Hemisphere during the growing season there which will keep us informed from week to week as to the development in the Southern Hemisphere, give us reports either weekly or even daily of important information that will keep the grain trade posted as well as the farmers. That is information that is wanted mostly. For example, we have a big live-stock industry in this country that is coming directly in competition with South America and New Zealand, a very serious situation. The competition of New Zealand lamb has awakened much attention. Many people were surprised that that country could import stuff into this country and break the mutton market as it did. There is a great demand for information as to what is going on in South America and New Zealand as to live stock; as to whether we will have to eliminate some of those lines; and we have no authentic information at all to give. We ought to have observers there all the time to keep us posted as to the different classes of live stock, hogs, sheep, and cattle, the development of their packing industry, and how it is coming into competition with things in this country.

In other words, we need to build up in a small way a sort of foreign market service that will give us market information, or at least information that will indicate the long-time trend as to supply and demand. We can not go into very great detail, but we can see the trend of European consumption for cotton, wool, and meat, and that is the thing we need to study carefully, because that is the only great worldmarket, and European demands to a large extent fix prices. We need observers in Europe, it seems to me, to study the trend of consumption in Europe for agricultural commodities. Then we need four or five good observers in those countries that come in competition with us—South America, Australia, New Zealand, Russia, and the Balkan States—to keep us posted as to developments of the commodities in those countries that come in competition with us, meat and grain mostly. We are going to get competition in cotton from Brazil and probably also from China in a few years. Those things we should study to keep our people posted as a matter of general information. For instance, we know that our exports sometimes were as high as 70 per cent, but during the movement of heavy ammunition our exports in agricultural commodities got down to about 40 per cent. Normally about 50 per cent of our exports are agricultural.

Mr. ANDERSON. In tonnage?

Mr. MONTGOMERY. In tonnage. We have a department of commerce that devotes practically all its time to the 50 per cent; that is, manufactured goods almost entirely. Now, it seems to me that we need a service, not as large, to take care and look after the interests of agricultural commodities. The farmers and producers have a right to this information. You can get such a service in two ways, build up an agricultural section in the Department of Commerce that also would give attention to other matters, because raw materials and manufactured products come in competition, or you can develop a group of men to give special attention to the foreign fruits and agricultural commodities and connect them with the Department of Agriculture without duplicating any work at all. My idea is to have regional men and utilize the present consuls and the present

commercial agents and direct them to collect what they want, as far as possible. I do not think that we are likely to get that information unless somebody does direct them.

Mr. ANDERSON. The information has got to be collected and distributed by somebody who knows, and even if you had a representative in Germany or in Russia or in Italy who could get the desired information with respect to that particular State, you still would have to have it put together and its relation to information in other States or countries determined before you got any information that would be of much value in establishing the price trend or the consumption trend.

Mr. ESTABROOK. There is now on the statute books and has been for something like 40 years or more, a law requiring the consular agents of the Government to report to the Secretary of Agriculture on crop conditions in foreign countries. That law is a dead letter. We have tried to use it, but we have never gotten any satisfactory information through that source at long range. They simply do not understand our problems. It is difficult to give them the necessary instructions which will enable them to get the information. The big thing in this item for the Bureau of Crop Estimates is to have men in these countries of large production and in competition with our own products who are capable of understanding the situation and who will get the information to us quickly by cable. I doubt if we can get this in any other way.

Mr. LIVINGSTON. I am not sure that Mr. Montgomery has made clear the fact that we do not propose to send specialists into those countries, but rather men with broad general agricultural training who will work in cooperation with the existing agencies there and do as much on their own part as they can.

Mr. ANDERSON. Of course, I can understand the desirability of sending a specialist to South America, because you have in mind there the development of a certain class of trade.

Mr. LIVINGSTON. A special thing.

Mr. ANDERSON. Yes; but in this regional proposition, of course, you would have to have a man of much wider knowledge and experience and broader vision than would be represented by a man who was a specialist upon a specific subject.

Mr. LIVINGSTON. That is what I had in mind when I spoke of the regional directors.

FOR COLLECTING, COMPILING, AND DISSEMINATING DATA CONCERNING AGRICULTURE.

Mr. ESTABROOK. Mr. Chairman, the next item is No. 85. That is for the Bureau of Crop Estimates, which, as you know, is the statistical and crop-reporting bureau of the Department of Agriculture. You will note that we are asking for a very considerable increase in the amount of the appropriation, and I confess that I feel some embarrassment in presenting an argument for that increase under the present conditions, because I realize as much as anyone does the necessity for reducing Government expenditures. I have realized that all along, and yet, in spite of that realization, I feel that we are justified in asking for a very considerable increase to expand and develop this service, which I think is of great practical

and financial value to the farmers of the United States. Its value lies in the fact that it is the bureau concerned in collecting definite data with respect to production and supply, and it is the relative production and supply which very largely determines the prices which the farmers receive.

That to them is, perhaps, the most important thing, because it determines whether or not their business is a properous one and whether it will pay them to go on with their production.

The present appropriation or lump fund of the Bureau of Crop Estimates is \$188,076, less \$20,000 for administrative purposes, leaving \$168,076 as the net amount available for the real work of the bureau. That amount, as compared with what we are asking, shows a net increase of \$422,665. That is divided up in various ways, and I can give it to you in groups, as it is in the notes, or I can give it to you item by item, whichever is most satisfactory to the committee. You will notice that in the note below this increase of \$422,665 is accounted for by several items.

FOR DEVELOPING THE REPORTS ON THE PRODUCTION OF TRUCK AND FRUIT CROPS.

The first item is an increase of \$121,765 for establishing reports on commercial production. That means the marketable surplus production of certain crops. In the past the bureau has estimated the total production—that is, everything produced on the farm. Only a part of that production, however, leaves the farm and enters commercial channels, and that is what we call the marketable surplus. It is that part of the crop which the farmer sells—his marketable surplus—that the farmer, the marketing and transportation agencies, and the consumers are most interested in. It is the part of the crop that reaches the consumer, and it is the part of the crop that largely determines the price. It is the foundation for all of these marketing organizations and institutions, including the State and Federal agencies. They are all interested in knowing what is the present and prospective marketable surplus, and they want to know that by recognized regions of surplus production. That is to say, there are certain areas out of which fruit comes, certain areas out of which tobacco comes, etc., and the growers want to know how much is coming out of each one of those areas. That is true because the farmers are in competition with each other, just as business men are.

The apple grower, for instance, wants to know how much is coming out of a certain region that is in competition with his product. This vast marketing machinery which has been developed and which the Federal and State Governments are developing is directly concerned with this kind of information. We had developed this kind of service for apples and peaches and were trying to extend it to other fruits, and also for truck crops and vegetables where shipments are made for considerable distances. Those two services cost between fifty and sixty thousand dollars, and they were highly satisfactory. When our appropriation was reduced last year we had to discontinue those two services, and the immediate reaction was a stream of protests from all sorts of people—growers and dealers and various marketing agencies. It was taking away a service that they believed was worth dollars and cents. We had many offers from various con-

cerns and people offering to contribute to maintain that service. They said they would put up the money for us if we would carry it on, but I think that is bad policy. Just as Mr. Livingston stated, we can not afford in a service of this kind to have our men under any financial obligation to any interest.

One of the chief values of this service of the Federal Government is the fact that it is wholly unbiased and disinterested, and therefore dependable. A similar service by a private agency might be just as efficient and just as good, but it would always be open to the suspicion that it is biased by self-interests.

Mr. ANDERSON. How often do you get out these reports on truck crops?

Mr. ESTABROOK. We had a weekly service for truck crops.

Mr. ANDERSON. Does that report undertake to estimate the amount of a specific crop under production at a given time?

Mr. ESTABROOK. Yes, sir: area by area. The country was divided up into certain areas of crop production, like, for instance, the onion district of Texas and the trucking districts along the Gulf coast and Atlantic coast and certain other regions, where strawberries, onions, cabbages, tomatoes, celery, early potatoes, peas, and string beans and things of that kind are grown. These crops seem to be relatively small in comparison with the great staple crops like cotton and wheat, but in the aggregate they run into many millions of dollars. It is a large industry and a very specialized industry, and it is extremely important to the growers.

Our commercial fruit crop estimating project was especially successful, particularly with apples and peaches, two crops which have an annual value of nearly \$300,000,000. Because of our success in dealing with these particular crops we wanted to restore the service for apples and peaches and extend the same service to other crops. We want to take up, for instance, the nut crops that are becoming more and more important. For instance, the pecan industry in the South has become extremely important, and it will become more so as the years go by. Then we want to apply the same sort of system to the great cereal crops.

Mr. ANDERSON. When you get to talking about pecans, walnuts, and hazel nuts you scare us to death.

Mr. ESTABROOK. Those are only incidental.

Mr. ANDERSON. The smallest of those things will grow as large as the Government itself.

Mr. ESTABROOK. Those small items can be handled with the same machinery that we use in handling the larger items, and therefore at very little additional cost.

Mr. WASON. You mean in the beginning. It might be handled in the beginning in that way.

Mr. ESTABROOK. No, sir; it can be handled indefinitely that way. If we have the machinery for handling the larger crops, the small ones can be handled with the same machinery. Take the great corn crop, for instance, which is the most valuable crop in the United States: Less than 25 per cent of it normally is marketed or ever leaves the farm, but that 25 per cent fixes the price of the whole crop. It is highly important that we map at seasonable times during the year the areas of surplus and deficient production. We have to do the same thing for feeds, and we have to do the same thing

with respect to such things as hay and pasturage, because it becomes tremendously important in times of deficient moisture west of the Mississippi River to know where feeds are abundant, when it is necessary to move hundreds of thousands of cattle across State borders to find feed for them and in order to save the industry.

FOR ESTIMATING THE NUMBERS, GRADES, AND VALUE OF LIVE STOCK AND LIVE-STOCK PRODUCTS.

The next big item, and, to my mind, the biggest item, in this increase is that relating to live stock, in which we are asking for an increase of \$141,330. Live stock is, perhaps, the most important farm industry in the United States. On the basis of last year's values the live stock on the farms was worth considerably more than \$10,000,000,000. It is a long-time industry, and there is a tremendous amount of capital tied up in it. When that industry meets with disaster or discouragement it takes years to bring it back. More than 50 per cent of all farm sales is in the form of live stock or live-stock products. Yet, for that great basic industry, which is so important in all farm-management problems and in the farm business, we have only two reliable sources of information. One is the United States Census Bureau, which makes a census every 10 years, but by the time the data are available their value is mainly historical. The present live-stock census was taken in January, 1920, and the figures are only beginning to be available for certain States. It will be the middle or the last of next year, probably, before all of them are available.

The next agency for collecting official information on the live-stock industry is the Bureau of Crop Estimates, and with our small appropriation the best that we can do is to estimate once a year on the basis of the census the total number of live stock on the farms. There is no service for live stock which corresponds to the monthly crop-reporting service. We have endeavored in a small way to establish an index by getting reports from a limited number of individual farmers as to what is actually taking place on their farms. We get from them a statement of the number of live stock that they had at the beginning, and then they report the changes that occur during the month—that is, the births, the number they buy, the number they have sold or slaughtered, and the number that have died. That gives the net number at the end of the month. By running that system of reports from month to month for two or three years we are getting pretty good information as to the changes taking place monthly, but it is an entirely too small a basis. We need to have trained men who understand the live-stock industry thoroughly and who can go out over the country and get the cooperation of the live-stock associations to give us the necessary data from which to make up monthly statements of changes occurring in that great industry. We need those men to devote their entire time to getting this information for live stock, just as the packers are doing and have been doing for years. If we could only have the money that the packers have expended for this purpose, we could give you the best live-stock statistics in the world. We think that it is time that this service was established in this way.

Mr. WASON. What good will that do the farmers as long as the packers absolutely dominate the market of the United States?

Mr. ESTABROOK. It is just possible that they may not always continue to dominate it.

Mr. WASON. Well, they do at present.

Mr. ANDERSON. There is not much indication of any change at this time.

Mr. WASON. I do not see any signs of a change.

Mr. ESTABROOK. Possibly one reason why they have dominated the live-stock industry so long is the fact that no one has the necessary data or the necessary information upon which to base a successful campaign against them. Now, if the Department of Agriculture could secure this definite and reliable information at frequent intervals, so that we might know at any one time the status of the industry, and so that we could forecast the condition of the industry—and we could do it just as well as we do it for the crops—that information would be of great value. We could forecast the industry six months in advance. We could forecast six months in advance the hog crop, the beef crop, the hide crop, etc. If that were done, the industry would be in a far better position to prepare for the future and make necessary adjustments than it is possible to do now with only this annual estimate of the number on farms in January. With the great farm organizations, which are now becoming so strong, and which are developing systems of cooperative marketing, it is possible that the time may come when the live-stock industry of this country will have as much information and as much to say regarding the marketing of their products as the great packers have, but they can not hope to ever get anywhere without definite data upon which to base their programs.

Mr. WASON. You may be right, but I do not quite follow your reasoning. If I have control of a given market, say, in New England, for buying live stock for slaughter; if I control that market absolutely, and have the money to maintain it, with no competition, I do not know that I would care whether the growers of the live stock knew how many beefs would be marketed there during the fiscal year, or how many hogs would be shipped, or anything of that kind. They might ship some in when the annual production was light, but I might have my cold storage and might not want to buy them at the price offered. The owner of the stock must unload them, because if he does not the demurrage charges will go on. I do not know of any power that could make me draw my check for the stock that was shipped in unless I wanted to do so. Enlarging my hypothetical question, it would cover the situation of the packers' association of the Middle West. It seems to me it is a fair comparison.

Mr. ESTABROOK. But suppose the growers have definite information as to the present supply and the supply in prospect. They know pretty well what the demand is, because the demand for food is fairly constant year after year. It increases somewhat with the increase in the population. It is affected, of course, by the financial situation; but in a broad way the consumption of food products is fairly constant. People can eat only so much, and if you have had a full dinner you can not eat much more. Now, if the growers have this information, and if they have organizations, as they are getting them now and developing them, and if they can finance the organizations, and they probably will be able to do that in time, they will, in the

first place, be able to make up their minds whether they are getting a square deal or not, whether the packers are performing a proper service, or whether, in the second place, it will pay them to set up their own packing and refrigerating plants.

Mr. WASON. They know that now. All of the farmers know that to-day, and you do not need to explain that to them. Any man anywhere from Boston to San Francisco can answer you as to that offhand.

Mr. ESTABROOK. Well, if they believe that you are not giving them a square deal——

Mr. WASON (interposing). They have already found that out.

Mr. ESTABROOK. Assuming that they have the necessary data and funds, is there anything to prevent them from going ahead and putting up cold-storage plants of their own or from making their own deals with the transportation companies, and in that way take charge of the whole marketing operations themselves? That is something that is in their minds right now.

Mr. WASON. That is in their minds?

Mr. ESTABROOK. I understand that is what these farm organizations have in their minds now.

Mr. WASON. That is another line of argument. You are now establishing a competitor. When a competitor comes into my territory, I will be looking out for him. The question that I was discussing was how the statistical information that you would gather would affect my buying tendency when I controlled the market.

Mr. ESTABROOK. It would depend on how good your present sources of information are.

Mr. WASON. I do not see any relevancy between the two things. In the case I have supposed, I would be an autocrat. I buy or do not buy according to my whim. If a man who has produced something that I buy ships it into my place expecting a reasonable price, he may take it away from my slaughterhouse. The farmer may expect a fair price, but I might conclude that I would not buy anything for 30 or 40 days. I would buy at my own price.

Mr. ANDERSON. It may not be quite as bad as that, but it is pretty bad.

Mr. WASON. It is pretty nearly that bad. What you are arguing for, as I see it, is that an organization of farmers might have the energy, foresight, and business push to create a large competitive purchasing agency that will successfully compete with the packers. That is what it comes down to, but I do not see that this statistical information will do any good.

Mr. ESTABROOK. The statistics would be of great value to the farmers' associations; indispensable, in fact. You, as the owner of that one cold-storage plant, would not dream of carrying on that business without pretty definite information as to the supply.

Mr. ANDERSON. Is not this the situation: Mr. Wason in the hypothetical situation that he suggested assumes that the present low price of mutton and beef is due to the fact that certain groups of gentlemen control the market. Now, they claim, on the other hand, that the price is due to economic conditions; that it is due to the fact that certain situations have resulted in large numbers of cattle and hogs being thrown on the market, and that the market has

been oversupplied, and that, consequently, the prices have gone down. Now, it might be worth while to know whether that claim on their part is justified by the conditions or not.

It might be of some value to know whether there is in the country to-day an oversupply of cattle or an undersupply. My guess about it is that there is an undersupply. There has been an overmarketing, but that overmarketing does not indicate an oversupply in the country. As I say, it might be of some value to the producer of the country to know whether those price fluctuations are really due to economic conditions or not.

Mr. ESTABROOK. Yes, sir. As I said a moment ago, the live-stock industry is tremendously important to our whole agricultural program. It is important in the utilization of roughage, stock feeds, and maintenance of soil fertility. Our whole agricultural program should be based on fairly definite information, because without it we are simply going ahead more or less blindly.

Mr. MONTGOMERY. Last week I attended a meeting of the Corn Belt Meat Producers' Association at Des Moines, and I found that the principal number on their program was the report of their statistician. They employ at their own expense a man whom they keep at Chicago and who collects data on Iowa beef that goes into Chicago. They seemed to think that it was very important for them to collect those statistics. I noticed also that the Illinois Agricultural Association is employing a man to do the same thing, and I understand that they are doing the same thing in Kansas. A number of times this summer I have heard farmers say that the Government ought to be collecting these figures, but that if the Government would not collect them, they would have to do it themselves. In a number of live-stock associations they have taken steps to do that.

Mr. ESTABROOK. That suggests the fact that we have repeated demands this last spring for assistance from farmers' organizations. First of all, the demand was that we supply this information that they wanted; definite information as to numbers, by age, sex, and other classifications, so that they would know how many head of stock were available, how many head of stock were going on the market later on in all of the corn-belt States. However, we were short of funds and without sufficient force. We could not handle it for them.

The best that we could do was to form a little cooperative arrangement and tell these associations that if they would finance the clerical service necessary and any incidental expense we would, through our field statisticians, who are located in each State, take charge of the work and direct it and make a summarization of the results. That work, I think, has gone on in nearly every one of the corn-belt States.

Mr. ANDERSON. How will you get this information?

Mr. ESTABROOK. We would get it through a much better and more complete organization. We would employ live-stock specialists. We would, of course, use our present machinery and our statisticians in each State. We would build up large lists of live-stock growers from whom we would get information, and through our specialists we would get all of the live-stock associations in the country to cooperate. In the past we have found that one of the main difficul-

ties in estimating the number of live stock is that you can not depend upon the assessors' reports, because they are inaccurate and understated. We have been told also that sometimes live stock are driven across county lines and State lines at the time the assessments are made. It is a little difficult to get a line on them. All of those things have to be looked into.

In the West, the character of the live-stock men is a factor. They are out in the open on the range, and they are not accustomed to writing reports. You can not get them to write reports, and the only possible way to get information from them is through personal interviews by specialists and through cooperation of their own organizations. We will expect to utilize all of those organizations. We are asking for seven live-stock specialists. They would be men who thoroughly understand the industry and who know all sources of information.

Mr. RUBEY. Where would they be located?

Mr. ESTABROOK. They would probably have their permanent headquarters here in Washington, but they would be out in the field most of the time. We would expect them, also, to draw up the schedules for the kind of information that we would need to have—that is, for our basic data. They would visit our State statisticians and instruct them as to the information required and the best means of getting it. Our State statisticians are men who handle all crops, including live stock grown in their States, but they can not specialize on one thing. Therefore, we need live-stock men who would be following this subject all the time. We would have these data coming regularly to headquarters here at Washington so that they could be summarized. It would be summarized and released, going out immediately through our States offices, through the press, and everybody would get it.

Complete, dependable, and timely information regarding live stock is one of the most crying needs in this tremendous industry. It is a \$10,000,000,000 industry, and our bureau has had less than \$25,000 a year for it.

There is not a packing concern in the country that does not spend more money than that for inside information for its own particular use. There is no industry anywhere near its size for which so little money is spent by the Government in the collection of the information that is needed in the study of these various economic questions. We have never attempted to estimate dairy products or poultry.

Mr. ANDERSON. Are you figuring on doing that now?

Mr. ESTABROOK. We would expect to do some work along that line.

Mr. ANDERSON. As far as I am concerned, there will not be anything done if it is to be spread around in that way. There will not be anything done unless we have an understanding that it will not be spread all over the country among 47 different kinds of propositions. If it is necessary to collect this information with reference to live stock, it should be done, but I have no patience with this idea of going into 47 different things at once.

Mr. ESTABROOK. In the case of live stock, we will do as we have done in all other things—that is, we would start with one thing at a time and develop that.

Mr. ESTABROOK. Probably beef cattle, swine, and sheep would be the big things we would first organize this system for, just as we did in our fruit work. We took apples and we developed and per-

fect the system for estimating the commercial apple production of the country. It was the best of its kind that had ever been developed. Then we extended the same system to peaches. We would expect to do the same thing now, starting with beef cattle, or swine, or sheep. Later we could extend the system to dairy products and poultry, which together have an estimated value in excess of \$2,000,000,000.

Mr. WASON. I would like to suggest that I agree with what the chairman said, and it is perhaps something that this committee would approve of, if we had the means, but we have got to cut our garment in accordance with the condition of the Treasury, and I think, Mr. Estabrook, if the Department of Agriculture would confine itself to certain of the more important things to begin with, and show some results along that line, it would be very much better. I question somewhat how much benefit these statistics might be regarding the beef cattle unless we controlled the packers, but I am willing to try it if that is thought to be best, but we can not go into everything, as the chairman suggests, at this time. The overhead charges of this Government must be reduced. I say that with all kindness and with no prejudice to agriculture, because, as you know, I am as much interested in agriculture as any of you gentlemen.

Mr. ESTABROOK. I realize, as well as anyone, the necessity and the demand which this country and which the Government itself is under to reduce its expenditures and the cost of Government, but it seems to me that agriculture is the last place where cuts should come. It is the one department which is doing constructive work, which is increasing production, which is increasing the revenues of the Government. It is not a dead expense like some of the other services, but it is an investment which is highly profitable to all the people now and for the future.

Mr. ANDERSON. The same claim will be made and is made by almost every department of the Government, I think, with the exception of the Army and the Navy.

Mr. RUBEY. I would just like to say that I would like to see us hold the agricultural bill up until the Army and Navy bills are reported, so that we can see what they are going to do. Heretofore we have always rushed in and reported our bill as quickly as possible, and have let those other things come in afterwards. I think the cuts should be made in military matters, and I am sure that cuts can be made sufficient to enable us to give agriculture what it ought to have.

Mr. ESTABROOK. Just as a layman, they are asking for an increase of more than \$500,000,000 over present appropriations for the military and naval establishments two years after the war. This increase alone is more than ten times the entire appropriation asked for by the Department of Agriculture.

Mr. HARRISON. Our increase represents only 1 per cent of the total increases requested this year by all the departments.

Mr. ANDERSON. But it represents 37 per cent of an increase over the appropriation for the current year, and it is three times, or very nearly three times, the largest increase ever estimated for the department.

Mr. HARRISON. I do not think that is entirely correct.

Mr. ESTABROOK. I can readily see the problem that is before this committee and it is a real one. I would assume, if I was charged with

that responsibility, that if I were to make cuts, I would first think of making them where increases are asked for, naturally.

Mr. WASON. I might help you there; we are not only thinking about that, but we are thinking of making cuts where increases are not asked for; that is, some of us.

Mr. ESTABROOK. I would assume that any group of business men would use discretion, that even though there is a policy of retrenchment and cutting down, and at first blush denying requests for increases, nevertheless there might be reasons for making a particular increase; just as a business man, if conditions required that he should cut down his overhead and cut down the expenses of his business, would cut out what seemed to him the least profitable lines or projects. On the other hand, he might have some branch of his business which promised great profits, and he would most assuredly want to strengthen that branch. It seems to me, taking the Department of Agriculture as a whole, there are certain phases of it which greatly need development and which it would be a serious mistake not to develop.

Mr. ANDERSON. The trouble, Mr. Estabrook, in my mind is this: With this particular proposition now, if this were a proposition to get information as to the number and grades and value of live stock alone, it might make some appeal to me, but when you start out with poultry and dairy products and nuts and hay and everything else, I begin to lose interest, because I know that is not possible, and the only result of it, it seems to me, is to prejudice the things that are really worth while doing.

Mr. RUBEY. Would it not be possible for you to centralize your efforts along one line and let us try that as an experiment, if we can not get the whole thing?

Mr. ESTABROOK. The same machinery that is required to get information regarding beef cattle will get a good deal of information regarding dairy cattle, as to their numbers. The same machinery that is used for procuring this information can also be used in collecting information on swine, sheep, and we had hoped on poultry, because poultry is a tremendously big industry, even though it seems small because it is subdivided so greatly. We have to maintain a certain organization in order to get the information regarding a single crop or class of live stock, which is an office in each State in charge of a trained man. We called him field agent for a number of years, and then to distinguish him from all the other field agents of the department we now call him a State statistician. That man has one clerk; that is, in most of the States. In a few States the statistician has no clerk. If that man drops out, it simply leaves his State without any organization, without any representation, and we have to fall back on the one remaining source; that is, written scheduled information from growers. That was the basis on which the bureau got its information before the present system was developed. In the old days we simply had a central organization here in Washington and sent out written schedules to growers throughout the country, and when that information came in it was tabulated and summarized.

That is one way of getting information. We still use it. We are using it to a larger extent than we ever did before. We have about 220,000 crop reporters, but that is not sufficient. We need one trained

man in each State who can get out over the State and see the situation with his own eyes. He has to be a judge of crops. He has to personally inspect crops and interview the best informed men in each county. He has to give us the first-hand information, which will enable the crop reporting board to interpret the vast mass of scheduled information that comes in, and it is quite necessary to have that check.

Mr. ANDERSON. Everybody out in the Northwest knew there would be a reduction in the spring wheat harvested six weeks before we had any information from the Bureau of Crop Estimates or could get any.

Mr. ESTABROOK. It is doubtful whether they knew just to what extent or could measure the extent of that reduction. We have found as a result of actual trials and of actual experience that we get better results by specialization, just as we did with apples, just as we have done with cotton. We need to have a man or several men who devote their entire time to one commodity to supplement, coordinate, and interpret these other sources of information. That is why we are asking for some live-stock specialists—men who will devote their entire time to studying these industries. We ought to have men who are the best informed in the entire United States on that subject. We have not got them now and it will take some money to employ them and to train them.

Mr. RUBEX. Do you get any information through the States?

Mr. ESTABROOK. We get some information, but it is not entirely satisfactory. For instance, we consult all the assessors' returns on live stock, but they are usually from six months to two years old, and we know that they are minimum numbers—nobody is going to report more live stock than he has, and they usually take in only certain classes; that is, animals above a certain age.

Mr. RUBEX. I get a report every once in awhile from our agricultural board in Missouri, giving a statement of the number of live stock and a statement of the whole situation throughout the State. I do not know how they get their information and I do not know how complete it is—whether it is merely guess work or whether it is accurately obtained.

Mr. HARRISON. Is not that a cooperative service?

Mr. RUBEX. I am asking whether you cooperate with them or not?

Mr. ESTABROOK. Yes; in Missouri and in 20 other States. The Bureau of Crop Estimates has linked up with the State departments of agriculture in 21 States. We have gone about that systematically.

Mr. RUBEX. If they have a good man in every county reporting to them or have some system of that sort, it would not seem to me necessary to have another man doing that same work, and by that sort of cooperation you should be able to get your information without the necessity of such a large expenditure of money.

Mr. ESTABROOK. We need these live stock specialists to go out and see that a uniformly good system is organized in every State. Few States have as good a system as we have in Missouri. Our Missouri field agent, Mr. Logan, is really in charge of the work in cooperation with Mr. Mays, the State secretary of agriculture. The work is really done under the supervision of our man, Mr. Logan, utilizing all the State machinery, and we have gotten splendid results in Missouri. By combining the two organizations we get greater efficiency at much less expense. We found in many of the States where they

had a State department of agriculture and it was doing crop-estimating work, that it was done in a very slipshod, unsystematic way. Many of them had employees who had been carried on the rolls for many years and they were doing their work in a perfunctory sort of way and took no particular interest in it, and they had gotten far away from the census and from our bureau figures, and there were two sets of reports coming out, a Federal report and a State report, which were not consistent, and which to an outsider who does not know how they are prepared is simply confusing. He does not know which to take, and so it seemed to us a splendid thing to cooperate with the State departments in that work, to strengthen the service, to do away with this duplication and this confusion, and we are doing that now in 21 States.

Mr. HARRISON. What Mr. Anderson wants to know, Mr. Estabrook, is the extent to which you are going to develop this service. Can you not indicate how we would be limited by this fund and just what you are going to cover?

Mr. ESTABROOK. This live-stock reporting project would cover the various classes of live stock throughout the United States. We report upon horses and mules, milch cows, and other cattle, upon swine and sheep. We had hoped if the appropriation were sufficient also to carry on estimates on poultry production, because, as I recall it, the poultry and eggs in this country amount to nearly \$1,000,000,000 a year—a pretty large sum—and that can be done with our regular organization without much additional expense. Probably the only additional expense with respect to poultry would be one poultry specialist, one man who devoted his entire time to working up poultry statistics. The big thing in this, of course, is the beef cattle, swine, and sheep, and it would be those three classes of live stock on which we would concentrate.

Mr. BYRNES. I know nothing about your estimates of other crops, but I can very gladly say that when it comes to cotton, after investigation, I have been amazed at the accuracy of your crop estimates covering a period of 10 years.

Mr. ESTABROOK. It is, I think, a remarkable showing, Mr. Byrnes, when you consider the nature of the cotton crop, which can change so widely in a short time.

Mr. BYRNES. I have frequently thought you were wrong, and when the census figures have been published I have been convinced against my own views that you were right.

Mr. ESTABROOK. The average deviation in our estimate of the cotton crop, grown in 15 States, as compared with the census returns through 21 years, is only about 1½ per cent. I suspect that is about as close, if not closer, than the census itself could duplicate its own work.

Mr. BYRNES. The farmers have generally complained whenever the indications were for a large crop, but according to my recollection of the figures when I investigated them, in the years when they did complain, when you erred you erred on the side of the farmer instead of against him.

Mr. ESTABROOK. Two out of three times the estimates are under rather than over. While that point is raised—as to the accuracy of this work and our system—I might say that I attended the general assembly of the International Institute of Agriculture at Rome in

November, and the statisticians and delegates from practically all countries in the world who were present at that meeting, and who, because of their official positions and their work, were more or less familiar with the statistical organizations of the different Governments, conceded without question that the Bureau of Crop Estimates had developed by far the best system in the world as a statistical organization, and it was in recognition of that fact and because I was connected with the bureau, that they made me president of their international statistical commission, as they call it. I only wish the American farmers and American business men could appreciate the fact that we have developed a really remarkable system and a very efficient organization for doing this work at a relatively small cost. The present appropriation for the Bureau of Crop Estimates for estimating about 60 crops several times during the year, monthly for some crops, and the 6 classes of live stock, is no more than the Census Bureau has for making a census of cotton ginned, just one crop grown in about 15 States, where they have gins, which are commercial establishments, and where the number of bales ginned is recorded, and it is a very simple matter to get these data together; and yet with about the same appropriation we are expected to supply monthly crop reports for 40 or 50 crops grown in 48 States, as well as this great live-stock industry; and for live stock, as I say, we have less than \$25,000.

Mr. ANDERSON. How often is this report on live stock supposed to be made?

Mr. ESTABROOK. We propose to make it monthly. At the present time we make the one report in January of total numbers on farms, and then along in May, I think it is, we estimate the number of brood sows and the number of head of live stock lost from disease and other causes; but what we ought to do is not only to have fairly definite data with respect to the numbers of live stock and show that by age and sex classifications, so as to measure the breeding strength and the number of births monthly and the losses from various causes, but we ought, in addition to that, to forecast the production months in advance just as we do for crops.

Mr. ANDERSON. Do not the various pure-blood associations know how much pure-bred stock there is in the country of their particular kinds?

Mr. ESTABROOK. They have estimates of the numbers of pure-bred stock, but that is only a small percentage of the total.

Mr. WASON. Do they not have it accurately?

Mr. ESTABROOK. I presume some of them do.

Mr. WASON. Do not all of them have it accurately. Every animal is registered?

Mr. ESTABROOK. As to the registered stock, yes, of course.

Mr. WASON. And they ask you to report deaths and they show the sales if there are transfers.

Mr. ESTABROOK. They should have it fairly accurately. I personally do not know. I have never had occasion to look into it.

ESTIMATES OF CROP PRODUCTION BY COUNTIES.

Mr. ANDERSON. Take up the next item.

Mr. ESTABROOK. The next item is for \$48,000 for estimates of crop production by counties. This is the result of a constantly increasing

demand for information by counties. It comes especially, I should say, from the business men of the country who want to know counties of surplus production and counties of deficient production, upon which to base their selling and distributing campaigns. Of course, the local organizations within the counties want to know county production as a matter of local pride and to advertise their communities and the relative agricultural resources of their counties.

Mr. BYRNES. I do not think much of that as a reason.

Mr. ESTABROOK. I am not stressing the point. I am simply mentioning, in passing, that we do get many such requests from local boards of trade and chambers of commerce, but here is another phase of it: Some millions of dollars are spent for maintaining county demonstration agents throughout the United States. Now, it is their business to build up and develop agricultural production within the counties. That is what they are hired for.

Mr. BYRNES. If you engage in that work, you would make them exceedingly happy, for just as Gov. Rubey suggests, they now guess at it, and as long as there is no accurate information each county can swear it has the greatest production in the State, and instead of developing county pride you would destroy their happiness.

Mr. ESTABROOK. We find that in many States where we are doing this it does arouse a great deal of local pride.

Mr. BYRNES. What purpose does it serve?

Mr. ESTABROOK. I do not know that it serves any useful purpose other than arousing local pride, which stimulates effort to improve farm methods and country-life conditions.

Mr. BYRNES. Then that is all. Let us go, then, to the next item.

Mr. ESTABROOK. I merely mentioned it in passing.

Mr. ANDERSON. I think that information would be more valuable with reference to live stock than it could possibly be with reference to grain crops. There is some advantage in knowing local production of live stock, because there is some local development of the packing industry and will be more.

Mr. BYRNES. That is true.

Mr. ANDERSON. But I am doubtful about the advantage of your statistics on grain production.

Mr. ESTABROOK. The point I was about to make, Mr. Chairman, was this: The Federal and State Governments are spending a good many millions of dollars for county agents, and the local communities are contributing their part, and these men are hired to develop the agricultural resources in their counties. Before they can do that intelligently, and before any man can undertake a campaign of development, he has got to take an inventory of some kind. He has to know where to start from, and he has got to be able to make up his mind along what lines the development shall take place, and we have requests from these county agents all over the United States for this very kind of information.

Of course, the agricultural colleges and experiment stations, and our own department here, want production localized by counties, and also that fits right into our first project, the idea of estimating marketable surpluses. It is highly important to localize those, and we can do it by handling it on this county basis. We have estimated that the increased cost would be about \$48,000, which is about \$1,000 to a State. It means vastly more detailed work, as you can readily

see. If we are reporting 60 crops, say, 12 times a year for 3,000 counties instead of only 48 States, it increases the total work tremendously, but we feel we can do it with our present force plus a little assistance.

Mr. ANDERSON. Take up the next item.

FOR COOPERATION WITH STATES RELATIONS SERVICE.

Mr. ESTABROOK. The next item is \$28,000 for cooperation with the States Relations Service; that is, extension work. It is new work. So far as we are concerned, it is a brand new item, and that is put in as the direct result of the action taken by the committee last year in cutting our appropriation and assigning as a reason for so doing that they believed that these crop estimates could be made **by county agents.**

Mr. ANDERSON. You are now going to make it cost us more money instead of less.

Mr. ESTABROOK. I tried to tell the committee then that it was impracticable; that county agents are not statisticians; some of them are but not all of them; that we have county agents only in about two-thirds of the counties in the United States, the other one-third having no county agents at all; that these men are busy men and fully occupied with their other work; and that they would need supervision and training if they were to be used as a part of our organization for collecting information. After the bill passed in that shape we had conferences with the States Relations Service to consider ways and means for utilizing county agents in connection with this great crop reporting work of our bureau, and they knew, as well as we did, that under the present circumstances we could not use them. So it was suggested that if we could detail about four men to the States Relations Service for extension work in crop and livestock estimating, and divide the United States into four regions with a man who was thoroughly familiar with our organization, our system and our methods of collecting crop statistics to instruct county agents in the collection and especially in the utilization of crop statistics, we would get somewhere in using county agents and in teaching farmers to use crop statistics. That is why the estimate is in this bill.

It is the expert judgment of the States Relations Service that through that means we can get very large returns. A further reason that appeals to me most strongly is this: While the Bureau of Crop Estimates has been doing this work for over half a century and while it has developed what is said to be the best organization and system in the world, the farmers of the United States do not yet understand that; they have to be convinced. That is absolutely true, and I know it better than anyone else, because I get the reaction. We can not convince farmers in a single letter that is written to them; and, furthermore, the value of crop statistics lies not only in their accuracy but in the use that is made of them. If we are simply getting statistics as a matter of information and history we might as well quit. It is their practical application to the business of farming, to the constructive development of agriculture in this country, and to the commerce in farm products that justifies the maintenance of this organization and its further development. My idea is that if

we can employ four men who thoroughly understand the use and the practical application of statistics to the farming business, and who can go out and teach the county agents, the county agents in turn can pass that information on to their constituency, and in that way we will sell this service to them and increase its usefulness and value a thousandfold.

FOR TRANSLATING, ANALYZING, INTERPRETING, AND PUBLISHING STATISTICS OF FOREIGN AND DOMESTIC AGRICULTURE.

The next item is \$15,000 for increased work in translating, analyzing, interpreting and publishing statistics relating to agriculture in this country and abroad. I can not think of a way that \$15,000 can be better expended than in making available to the public some of our vast stores of statistical information which we have accumulated in the bureau, and which are of no use to the public because they are locked up in our archives, as well as the mass of statistical material that we are turning out month by month which needs interpretation. In 100 people there is a relatively small number who can take a column of figures and get anything out of it, who can see the significant points in it. We need a few men—who are not engaged in administrative duties and other work—who can sit down and analyze this stuff that comes to us, pick out the significant facts and put them on a chart so that anybody who does not know a thing about figures can see that picture and understand what is taking place. That is the purpose of this little item. We want to employ a few trained men to do nothing else but analyze and chart the current information that the bureau is collecting and show the trends, so that all this stuff will be intelligible to us. The class of men who are competent to do it now are tied up with administrative duties and they have not the time; they are interrupted and they have something else to do.

Mr. WASON. I notice you use and emphasize the word "men." Do you not think women can do that about as well as men?

Mr. ESTABROOK. I used the term "men" in a general sense, including, of course, women.

Mr. WASON. Meaning both?

Mr. ESTABROOK. Yes. Some women have the statistical and accounting faculty very highly developed, but not all of them.

FOR DEVELOPING AND EQUIPPING THE SERVICE.

The last item, \$68,570, is for developing the service as it should have been developed years ago. We have not had the necessary facilities for doing our work that most other bureaus have, and, above all things, we have a crying need for travel money. We have in each State a field agent whose principal value to us is his expert knowledge of crops, his ability to judge, his ability to get the cooperation of well-informed men throughout the State to work with him and for him. Now, he can not do that at a desk; he has got to get out and see the crops with his own eyes month after month during the growing season; he must keep in close touch with what is going on; otherwise we are not getting his full value.

For this present fiscal year we have about \$10,000 for 40 field agents in 40 States and groups of States; that is about \$250 per man and \$250 does not go very far under present conditions; and those field men, whose main value consists in their trained judgment of growing crops, have been tied to their desks by a lack of sufficient travel money. They should have not less than \$1,500 to \$2,000 to cover a State thoroughly during the year.

Mr. ANDERSON. What you say about this travel business interests me considerably. According to your tabulated statement on page 272 you have 44 persons employed, exclusive of the field clerks, and you propose to employ 137, which is an increase of 93 and a little better than 200 per cent; you have this year allotted for travel expenses \$10,000, while you propose to allot for next year \$197,000, which is an increase of very nearly 1,900 per cent. It seems to me there is a discrepancy in those figures.

Mr. ESTABROOK. The discrepancy comes about in the fact that we practically have no travel allowance this year.

Mr. ANDERSON. Take the year before, when you had \$34,000.

Mr. ESTABROOK. That was insufficient, entirely insufficient, and the result of that is shown in decreased efficiency. We have not the same confidence in our crop reports now that we had three years ago and can not have.

Mr. ANDERSON. Nobody else has, either.

Mr. ESTABROOK. That is the natural result of crippling that service.

Mr. WASON. But you are multiplying it five and a half times.

Mr. ESTABROOK. We are asking for a much larger number of men, of course, and the amount for these 40 field agents should not be \$250 per man, but at least \$1,500 per man, and in the case of crop specialists—

Mr. ANDERSON (interposing). All of these men are not field men, are they?

Mr. ESTABROOK. Those 40 men are; yes.

Mr. ANDERSON. For 40 men you have \$4,000 for each man, and more.

Mr. ESTABROOK. They will not get all of that; the 40 men will get about \$1,500 each.

Mr. ANDERSON. Who gets the rest?

Mr. ESTABROOK. In addition to those 40 men we are proposing to employ 20 assistant field agents. A single man in a State is not able to handle the volume of work that is coming to his office; he can not cover the State adequately in the growing season, when it is necessary to get around frequently; it is impossible for one man to cover a State like Texas or any of those larger States; the territory is too large. In the second place, it takes from two to three to four years to train and develop a field agent until he is of real value to the service, and then when he goes out, if he is the only man we have in the State, there is no one to take his place; there is no one in the United States who can take his place; and that is mighty poor organization. We ought always to work our men in teams; there should be a pair of them; there should be an understudy, so that when No. 1 drops out No. 2 can go right on with the work without interruption, and we feel that it is highly essential to have this second man in each one of these State offices. We propose to pay him a salary of about \$1,800, and to give him some travel, not much, but some travel dur-

ing the year; we propose to break him in, have him in training as the No. 2 field agent who will become No. 1 when the first man goes out.

Mr. WASON. If you gave him the same travel that you do the 40 men that would only be \$120,000, while you are asking \$197,000. Seventy-seven thousand dollars is unaccounted for.

Mr. ESTABROOK. We are asking for a large number of specialists, seven truck-crop specialists, seven fruit specialists, seven live-stock specialists, four extension specialists, and specialists for cereal crops, potatoes, cotton, and tobacco. A specialist travels a good deal more than a field agent because he has a larger territory to cover; a field agent is limited to the one State in which he is stationed, but a specialist covers a group of States. For instance, one cotton-crop specialist covers the entire cotton belt.

Mr. ANDERSON. I notice you estimate for three foreign specialists?

Mr. ESTABROOK. The foreign specialists may be omitted; and there is a chance for you to exercise your snickersnee and cut out something.

Mr. ANDERSON. It did not escape my eagle eye.

Mr. ESTABROOK. That was put in when we made our estimates as a separate bureau; then when it was decided to combine these two bureaus it was decided that those specialists could be cut out; and that is one of the economies resulting from the consolidation. We can utilize the same men in foreign countries for collecting crop-production information as well as for collecting information with respect to the demand, which are provided elsewhere in the estimates; and this item may come out; it is here by mistake.

Mr. RUBEN. When you spoke a moment ago about seven specialists being located in Washington, it seemed to me that you could save a whole lot of traveling expense if you could have the country divided into seven districts, with men located in each district.

Mr. ESTABROOK. You are right, Mr. Ruben; and that really is our plan. When I said they would have their headquarters in Washington I was recalling the time when we only had one or two; but when we have a group of them the territory will be divided into regions, with a specialist in charge of a region; and we will have one overhead man who will look over the entire territory.

FOR REPLACING EQUIPMENT, NEW APPLIANCES, TRAVEL EXPENSES, ETC.

Mr. ANDERSON. There is one item you have not discussed—item F.

Mr. ESTABROOK. That item is intended to supply a deficiency in our present finances. The Bureau of Crop Estimates has never had adequate equipment, either in supplies, travel money, or salaries. It has grown slowly and gradually. If we could have organized this bureau as a new bureau at any time within the last 10 years, we could have started with more than we have ever had. You know the history of appropriations; they grow very gradually, and it is extremely difficult to get even a small increase from year to year, and this bureau has been under that handicap. You might be interested in my making a few comparisons. For the fiscal year ending June 30, 1919, the total appropriation available for the Bureau of Crop Estimates was \$580,542; that includes \$130,440 statutory,

\$215,562 regular lump sum, and \$234,540 from the war-emergency funds.

It was with that sum of money that the bureau expanded to meet the increased demand growing out of the war, which demand is continuing until the present time. The following fiscal year the war emergency funds were cut out and there was a slight increase in the regular lump fund; the net decrease was \$209,440, or 36 per cent, from 1919 to 1920. At that time we had to dispense with 20 per cent of our clerical force in the Washington office, but during all this time the demand which was stimulated by the war has continued to increase. Then, for the present fiscal year the appropriations were still further reduced to three hundred and eighteen thousand and some odd dollars, a decrease of nearly \$53,000, or 14 per cent. The decrease in these appropriations in two years since 1919 is 45 per cent. The first year when the decrease was made we made an attempt to continue the same service with a decrease of 36 per cent in funds. We found we were attempting to carry too large a burden and had to cut down the service before the fiscal year was through. When the decrease was made last year it was quite evident that we could not continue the same service with less money and, therefore, we discontinued the special service for fruit crops, truck crops, cotton, tobacco, and rice. It is quite evident that if there should be any further decrease in funds available to the bureau the only possible way of getting through would be to reduce the service the bureau is now rendering. If the appropriation is simply continued without increase or decrease, I seriously question whether it will be possible to maintain our organization another year. Up until the present time I think the Bureau of Crop Estimates has succeeded better than perhaps almost any bureau that I know of in retaining its trained men in service. We have done that in various ways, but mainly by inspiring them with the belief and faith that the splendid service which the bureau is rendering and this splendid organization which has been built up will receive recognition at the hands of Congress in the form of an adequate appropriation. Practically every technical man in the bureau has refused one or more offers of salaries ranging from 25 to 150 per cent over his present salary; that means that practically every man in the Bureau of Crop Estimates has remained at a financial and personal sacrifice; he does it because of his faith in the practical value of this service, because he believes it is a necessary service, because he can not see why Congress should not give it the recognition which it deserves, because he realizes that it has a direct bearing on the price of every farm commodity, and because he knows that every farmer is interested in the price as well as every consumer. This force of men can not be expected to remain indefinitely under those conditions, and I can not hope to hold them another year unless they can be given some encouragement. Therefore, I say that if this appropriation simply remains as it now is I doubt very seriously my ability to hold these men in the service.

Mr. WASON. I have been listening to that same talk from every department in the city of Washington, and here is the situation in which the legislative subcommittee finds itself, and I imagine we will find ourselves in the same situation: There is a proposition before Congress, and a bill has been introduced, for the reclassification of salaries; I do not think it will be enacted into law at this

session, but I hope it will be considered at an early date. The legislative subcommittee took the position that they did not see how they could meddle with salaries when we were about to fix them all around—in other words, we could not make an attempt to fix salaries in the various departments at this particular time, but that Congress should give us an organic law, and then we would be glad to make the proper appropriations. I do not know how this subcommittee feels, but I am telling you just how we have been acting on another subcommittee; and, as far as I am concerned, that will have to be my view in order to be consistent.

Mr. ESTABROOK. I appreciate what you say. I had something to do with assisting the Joint Reclassification Commission, so far as the Department of Agriculture was concerned, in getting together the data which led to its monumental report. But you gentlemen are probably in a much better position to judge of its prospects of getting through during this next fiscal year than I am; I have no means of knowing, but I am not especially hopeful. The argument I am making is not only the matter of salaries our men are drawing for the service they render—although, of course, they must live as other people live—but the fact that they have remained shows that they are not there for the simple dollars and cents involved in their salaries; they are there for the service they can render, the opportunity for service and for developing the service; that is what is holding them, the belief and the feeling that they have an opportunity to assist in building up this splendid service, and they see the need for extending it, just as I do, and it is that which is holding them. My point is this, that if the committee simply allows the appropriation to stand at its present low and inadequate scale, these men will be discouraged and will say, "Well, it is hopeless; what is the use? If this service is not to be supported, and if it can not get recognition from Congress, why go on? I will go out and get an increase of 50 or 100 per cent in my salary, and where I will have some prospect for the future, and let somebody else take it up." And when one of these men goes he can not be replaced.

Mr. WASON. Is not the Grim Reaper following your department the same as the rest of the world?

Mr. ESTABROOK. Well, when I say he can not be replaced I mean he can not be replaced readily; I do not believe any man is indispensable; we can all be dispensed with and the country will survive, but what I mean is that when one of those men leaves it is an administrative problem to find a suitable man to take his place; it takes time, no matter how well qualified he may be in the way of education; he has to learn this system; he can not learn it anywhere else, and it takes about two or three years to become a judge of crops throughout a State; he first has to learn the crops of a State, and he can not learn that in one year, because that one year may be an abnormal one.

Mr. WASON. Is not that equally true of the manager of a farm, that it takes him his lifetime to get it right, and when he passes on somebody else comes along?

Mr. ESTABROOK. That is true; yes. Notwithstanding the necessity under which the committee labors to economize, I sincerely hope you will see that this is a piece of constructive work; that this estimating of production and supply, that the estimating of demand, and also

one other branch of our service, the farm management or economic branch, which is concerned with ascertaining the cost of production, represent three things on which the farmers of this country need definite data—the cost of producing crops plus definite data on crop production, the supply, present and prospective, plus the best information obtainable on the demand.

Those three things are absolutely necessary for all governmental, public, and private agencies, and the great farm organizations which have to do with considering these questions of production, marketing, and distribution. There may be some slight economy in cutting one of these appropriations, but if the cut should come in the marketing service or the crop-estimating service it will not result in real economy at all, because the farmers realize the necessity of having this information; and in their organizations it is one of the first things they realize, and the very moment our service falls down they will attempt to replace it with an organization of their own, and when they do that they will have to spend many times the money that is required to maintain this organization which is already developed. That was demonstrated during the war when various attempts were made to obtain information through other organizations; we saw hundreds of thousands of dollars wasted throughout the United States in trying to get information which might have been gotten at very much less expense by this bureau.

Mr. ANDERSON. There has been a good deal of criticism coming to me with reference to a supplementary estimate made along about the 15th of December with regard to the visible supply of wheat, either through the readjustment of your figures with the Census Bureau or something of that kind. You estimated 38,000,000 bushels more in the country than previously estimated. This estimate, it is said, was made at a time when the price of wheat was just beginning to stiffen a little again and had the effect of breaking the market 6 or 7 cents a bushel. The criticism made to me was that it was not the actual figure anyhow, and that nobody really knew whether there was that much more wheat in the country or not, and that it was a very unfortunate report. Have you anything to say about that?

Mr. ESTABROOK. Yes: I am very glad you mentioned it, Mr. Anderson, because it is a report that has caused some criticism; at least, a very unfair criticism came out in the Washington Herald a few days ago. I have not seen any other criticism. It has been the practice in the Bureau of Crop Estimates for many years to revise its estimates in December. Estimates of acreage planted are made early in the season—the best estimates that can be made at that time of the number of acres in each State planted to each crop.

Then, later, we get the average yield per acre, which is applied to the acreage and gives us the total production. After the first preliminary estimate is made it stands until the December revision. In the meantime, however, our field statisticians and the bureau continue to gather information on acreage. We check from every available source, especially the State assessors' reports which are made in the spring, if access to them can be had by our field statistician. He gets those figures and then he has to check them up in various ways. One way is to ask our reporters and others to apportion the acreage between the different crops in every 100 acres—how much wheat, corn, etc. In this way we get indexes and ratios which we apply to

the preliminary estimate of acreage in the spring. At the December meeting, usually about the 15th of December, the crop reporting board sits down with all of this evidence which has been collected following the preliminary estimate and checks up crop by crop and State by State. Where the evidence shows conclusively that the early estimate was in error, as sometimes happens, the correction is then made as it should be. In the case of wheat this year we found that there had been an underestimate of the acreage on the part of the reporters. The psychology was such at the time they were reporting that it led them to think that less had been sown than was actually sown.

In the spring we estimated the number of acres of winter wheat which had been abandoned from winter killing. We found that the reporters had overestimated the abandoned acreage, because up to that time the season had been very unfavorable—you will recall that all reports last spring were very pessimistic; that the farmers had not been able to work because the weather was bad up to May, and then the turn came and the weather became exceptionally favorable for most crops. Our investigation, carried on throughout the season, showed that the wheat acreage had been underestimated and the abandoned acreage had been overestimated and that the harvested acreage was really larger than we had estimated it in the spring, and we made the correction. It was unfortunate, but it was necessary in this one crop. In about 40 crop estimates revised in December, as I recall, this is the only one in which a material change was made. About the price effect of the correction, it was said that this estimate caused a depression in the price, losing sight of the fact that for a long time before the correction was made the farmers had the benefit of an underestimate.

ADMINISTRATIVE EXPENSES IN CONNECTION WITH INVESTIGATION,
EXPERIMENT, AND DEMONSTRATION WORK.

Mr. LIVINGSTON. The next item is No. 87, for general administrative expenses in connection with the lines of investigation, experiment, and demonstration conducted in the Bureau of Markets and Crop Estimates. There is an apparent increase of \$9,365, but there is an actual decrease of \$10,635, due to the consolidation of the Bureaus of Markets and Crop Estimates. This item will now meet the administrative expenses of the combined bureaus.

TRANSFER OF DUTIES TO THE BUREAU OF MARKETS AND CROP ESTIMATES.

The next item is No. 88, which transfers the previous duties imposed by law on the Bureau of Statistics and the Bureau of Crop Estimates to the proposed consolidated Bureau of Markets and Crop Estimates.

FOR THE ENFORCEMENT OF THE UNITED STATES COTTON FUTURES ACT.

The next item is No. 89, enforcement of the United States cotton futures act, in which we are suggesting certain changes in the wording of the item itself, and I will ask Mr. Morrill to outline very briefly the reason for those proposed changes.

Mr. MORRILL. The change relates to the purchase of cotton. Heretofore we have been compelled to send back to the Treasury the money received from rejected cotton which we could not use for the purpose of preparing the standards. We spend a large part of the appropriation for the enforcement of the United States cotton futures act for buying cotton for the preparation and distribution in practical form of standards. The cotton is bought out in the field on the basis of samples after such examination as can be made. Because they are the basis of arbitrations and settlements of disputes involving the application of the standards in the buying of cotton on future exchanges and in the spot markets there must be almost perfection in the samples which we use. Consequently we have a great deal of cotton that after we get it to Washington and have paid the freight charges we find it either contains only a small amount of cotton that is usable or turns out not to be satisfactory for our purpose.

That is no criticism of the man who buys the cotton. His work is done under conditions which do not permit him to make the exact match which can be made in Washington. During the past two years the price of cotton has been so high that we have not been able to maintain our stocks for the preparation of these standards and we are therefore quite short now. Notwithstanding the price of cotton has dropped materially from what it has been heretofore, that drop merely enables us to come somewhere near catching up by buying additional cotton this and next year over what we have been buying for the past two years and that will enable us to go ahead and prepare standards such as we are called upon to furnish. We do not give these standards away; they are sold in accordance with the terms of the cotton futures act.

Mr. ANDERSON. How large a stock of cotton do you have on hand to make these standards with?

Mr. MEADOWS. About 400 bales of Upland and 50 bales each of sea island and Meade. That is the required amount.

Mr. ANDERSON. You have lost some money?

Mr. MEADOWS. That is not a matter on our part of trying to expand the service.

Mr. MORRILL. We have a couple of men out in the field on account of the drop in the price buying it while down. We are not able to get it exactly as low as the market, because the Government does not pay cash, and therefore the people exact a higher price from us than from others. In addition to that we impose a good deal of trouble in getting exactly the kind of cotton we want. The whole work done under the cotton futures act might be considered under two heads, the purchase of cotton and its preparation and distribution in the form of practical standards and the cotton quotation service, as provided for in the last amendments to the act. There is to be no increase in the personnel or expenses connected with the quotation service. It is to be maintained on just its present basis.

Mr. BYRNES. As a result of this change of language you say that you will want an increase in the appropriation?

Mr. MORRILL. I say we will not. We will get more results in the purchase of cotton because of the drop in the price. We will actually maintain ourselves on the present basis. There will be no increase in the service.

Mr. BYRNES. I judged that from the Book of Estimates.

Mr. MORRILL. We are not expanding at all.

FOR ENFORCEMENT OF THE UNITED STATES GRAIN STANDARDS ACT.

Mr. LIVINGSTON. The next item is No. 90, enforcement of the United States grain standards act, where we are asking an actual increase of \$199,567. Mainly, that increase is to be used for the enforcement of standards for milled rice, rye, and the grain sorghums. If we are to enforce those standards, it will be necessary to have this increase. If the increase is not granted, we will simply not enforce the standards for those three commodities.

Mr. ANDERSON. Is the increase dependent entirely upon the promulgation and enforcement of standards for rice and grain sorghums?

Mr. LIVINGSTON. Virtually so. There is a demand for the service. Whether that demand is met or not is dependent entirely upon the appropriation.

ADMINISTRATION OF THE UNITED STATES WAREHOUSE ACT.

The next item is No. 91, administration of the United States Federal warehouse act. I will ask Mr. Morrill to discuss that item with the committee.

Mr. MORRILL. I assume because of the past history of the warehouse act that the chairman, particularly, who has observed this act, will be interested in knowing what has been accomplished. Mr. Livingston asked me to take charge of the work under the warehouse act last June, and I have been personally in touch with its operations since that time. Prior to that I was simply more or less in the capacity of legal advisor.

During the period since July 1 we have licensed approximately 240 warehouses, at the rate of 40 a month, and the applications are right now, at Christmas time, coming in at the rate of one a day, and we are issuing licenses approximately at the same rate.

In July, I think it was, we issued the regulations for wool warehouses. The tobacco regulations have been approved and are in the hands of the Government Printer for distribution. In the short time since the wool regulations have been in effect we have licensed only five warehouses, but those five warehouses have 20,000,000 pounds of wool in them, one-twelfth of the wool clip of the United States. In that time also we have been called upon from different sections of the country, because of the announcement of our tobacco regulations, to enter upon the work of tobacco standardization, so as to carry out that purpose of the warehouse act. There are now no standards of any kind that are in general use for tobacco, no commercial standards. The feeling among the tobacco trade and the industry generally, is that the warehouse act, while it would be of value in its present form, would be much more valuable if we had practical working standards that the farmers could apply in the warehousing of their tobacco. The trade themselves desire it. For instance, we have had that problem put up to us particularly from the Connecticut Valley Tobacco Growers' Association, and it has been brought to our attention from Kentucky.

Some discussion of it has been had in North Carolina. That, however, is work that we will start on with our present appropriation and the increases we are asking are not for the purpose of increasing any activity of that kind but simply to maintain it. The increase that we are asking for is for the purpose of taking care of requests that come to us for explanations of the warehouse act, because at the present time we are not able to comply with requests that come to us for men to come out and explain the warehouse act to warehousemen and farmers' associations and to bankers and State officials who are interested in the matter. I have followed the policy since I have been in charge of the administration of the warehouse act of getting results where they count, because of the fact that most warehousemen feel before they come into the warehouse act that they want to see how somebody else has gotten along. The trouble with that is that if everybody held back nobody would come in, but as a matter of fact we have gotten the entering wedge and 240 warehouses have been licensed up to this date. The statement should have been made before that this involves an added number of men who are necessary to make actual inspections and to pass on the warehouse applications that are made.

MR. ANDERSON. I do not just remember, does the warehouse require periodical inspections?

MR. MORRILL. It does not require periodical inspections in the sense of regular inspections, but it does contemplate inspections at irregular intervals, because it is desirable that the warehousemen should not know exactly when the inspector is coming around. They try to make the inspections four times a year. In some cases we actually only make them three times. Sometimes an inspection will follow another in two months and sometimes in four months, but in the course of the year there will be three to four inspections. We get a certain number of reports which embrace a limited amount of information that is necessary to keep us in touch with the warehouses. It may be of interest to you to know that we have now nearly \$2,500,000 of bonds covering warehouses that are licensed.

MR. ANDERSON. You mean bonds carried against the warehouses?

MR. MORRILL. The warehouseman under the United States warehouse act must furnish a bond before he gets his license as a warehouseman. We have been able to limit those bonds almost entirely to surety company bonds, notwithstanding the expense of that. As a matter of fact, the warehouseman comes in sometimes because he expects increased business—we have the statement of some of the warehousemen to that effect; in other instances they come in because their customers demand the assurance and protection that they will get from having the warehouse licensed under the warehouse act, and in other cases they come in because the bankers insist that the protection shall be afforded so as to strengthen their receipts for rediscount purposes. In order to ascertain how different people who came in contact with these warehouses looked at their operations and how the act worked, with a view to finding out whether there is really anything in it, simply for my own information in determining my future course of action, I addressed a letter to some banks at points where licensed warehouses are located, and as illustrative of the character of statements that we have received, I have a letter

here from the Farmers' and Merchants' Bank, of Douglasville, Ga., a small bank in a town where there is such a warehouse. It says:

Yours of the 21st received in reference to the bonded warehouse we have in our town. The bonded warehouse is a lifesaver for any town. I feel sure we will never be without one again, it is such a safe place for the farmers to store their cotton, and it makes a banker feel so much better for a farmer to come into his bank and say here is my cotton receipts, please attach them to my notes, and if you need them to help your credit go ahead and use them.

Almost uniformly the bankers in the towns where the warehouses are located that are licensed under the warehouse act write us to that effect. I have been careful in making my inquiry, and framed it so as to call for criticism, if any criticism was to be gotten, without any idea of commendation, unless they wished to commend the operation of the warehouse act. At Atlanta the Federal reserve bank is behind the warehouse act, cooperating with us, through the means of publicity matter and otherwise, endeavoring to bring warehouses under the warehouse act. The same is true of the Dallas Federal reserve bank. St. Louis and Kansas City have also given their approval. Also the Richmond Federal reserve bank. I might say this, with reference to the Dallas Federal reserve bank, that when one of our field representatives went to call on the governor he said, "We have a State warehouse act which seems to be all right. What good is your warehouse act, in what way will it help?"

As a matter of fact, the governor of the Federal reserve bank absolutely refused to cooperate, because, as he said, he "saw no use in it." But, after going over the act and the regulations and the form of receipt which we issue, he voluntarily took the matter in hand and prepared a circular letter to all of the banks, calling their attention to the warehouse act and calling attention to the very objection he had raised, reversing himself on it, and adopted our warehouse receipt as a substitute for the form which he had formerly approved, calling attention to that.

We have during the past two weeks received a call from the State Department of Agriculture of Oklahoma, asking us to cooperate with them in formulating a bill which will enable the State of Oklahoma under its warehouse act to operate in conformity with the Federal warehouse act, with a view to the operation of both acts in the State.

Mr. ANDERSON. Is any license fee required under this act?

Mr. MORRILL. There is a license fee of \$2, and an inspection fee ranging from \$5 to \$50, according to the size of the warehouse that is applying for the license.

Mr. ANDERSON. The inspection fee is exacted at the time of making the application?

Mr. MORRILL. Yes, sir.

Mr. ANDERSON. There is no subsequent fee for inspection?

Mr. MORRILL. No, sir. The expense as it is is rather heavy to the warehouseman, and the Government does not itself in any way compensate him directly for the expense he incurs. He must justify his expense either out of increased business, increased earnings, or out of the satisfaction of his customers from the benefits they get from the operation of the warehouse act.

Mr. ANDERSON. Do the regulations require insurance by the warehouseman of the contents?

Mr. MORRILL. In the case of the cotton regulations they require him to insure at the request of the depositor. In the case of the others it is a little bit different. In tobacco it is left to the depositor and the warehouseman to agree upon the matter of insurance, but under all the regulations the warehouse receipt must expressly state whether or not the commodity covered by the receipt is insured, and if so, to what extent.

Mr. ANDERSON. Have you a copy of the standard receipt?

Mr. MORRILL. Yes, sir [handing it to the chairman].

Mr. BYRNES. I have never understood why they did not more generally go into this warehouse system. I think a lot of it is due to the red tape attached to it.

Mr. MORRILL. I think it is not quite that. It was a new thing, and they did not know the benefits and they were waiting to find out.

Mr. HARRISON. And then the war came along.

Mr. MORRILL. Yes; the war came along, and they did not want to enter into something of this kind which seemed to be largely experimental anyway, but aside from the war there was the natural hesitancy of the southern people to try out something new, which was experimental. They are doing it now. North Carolina two years ago passed a law under which it assessed 25 cents a bale on cotton ginned for the purpose of establishing a warehouse fund. They provided for the State leasing and operating of warehouses. That act, nevertheless, which was passed two years ago, was never put into effect until this fall and has only been operating about three months, but in that time they have placed, I think, 25 or 26 warehouses, that they had leased, under the Federal warehouse act for the purpose of giving the State warehouse system a standing with banks outside of the State of North Carolina.

In addition to that, I am advised that recently there was a failure of a very large cotton warehouse in Georgia where there were receipts outstanding for something like 4,000 bales of cotton that were not in the warehouse. Immediately upon that failure the Georgia Bankers' Association called on our Atlanta office for information about the warehouse act. They are getting behind the member banks, and we have had a great access of applications for licenses.

Mr. ANDERSON. You naturally would think there would be more, since they are trying to hold cotton now?

Mr. MORRILL. To some extent that is true, with the additional factor of the apparently greater safety of the Federal warehouse system, of the inspection, and the bond. As a matter of interest, we had one warehouseman who died and another man who had a fire, and one or two other instances of that character, and in each case the warehouse checked out all right. As to the grain warehousemen, they have had a strong reason for not coming in under the warehouse act, because of the Government's control exercised during the war and the fear of Government regulations. But, as a matter of fact, we have now 39 warehouses licensed under the act since last July.

Mr. ANDERSON. Where are the grain elevators located, in a general way?

Mr. MORRILL. We have warehouses licensed in Colorado, Indiana, Arkansas, California, Idaho, Illinois, Kansas, Missouri, New York, North Dakota, Ohio, Oklahoma, West Virginia, and Pennsylvania.

In the beginning I tried to work out the system on an economical basis, but found that there was this distribution all over the country and I could not help it. The applications have come in and we have tried to handle them. It is beginning to demonstrate itself as being all right from the standpoint of the warehousemen and the bankers.

The increase is necessary for the purpose of taking care of the applications plus the necessary work of inspection, and because while a good many applications are coming in of warehousemen, there are a good many who come in only after talking to the representative of the department who can explain all of the benefits of the warehouse act. They do not know what the benefits are. That can not be done very well by correspondence.

In other words, a large part of the expense of getting warehouses into operation has depended upon the volume of work in establishing the fact that it has any value. By way of explanation of this other work, I may mention the work involved in getting the Southeastern Underwriters' Association to grant a reduction of insurance rates of 25 per cent on cotton stored in licensed warehouses, and such work as getting these Federal reserve banks to approve the receipts—

Mr. BYRNES (interposing). What is the increase for?

Mr. MORRILL. The increase is for the purpose of providing additional field men to make inspections, and to pass on the applications and to answer the questions that are asked regarding the act, with one man in Washington to take charge. I am simply acting in the interval until we can get somebody to handle it better than I can.

Mr. BYRNES. How many new men do you propose to add?

Mr. MORRILL. There will be one man in charge, three additional supervisors, six inspectors, and three stenographic clerks. When I use the term "supervisor" that does not mean that he is an office man, but it simply means that he is at headquarters where he can handle inspections as they come in from the inspectors, and himself take care of inquiries as they come in.

Mr. BYRNES. Do you think that the organization has proceeded to such an extent that you should now divide it up into divisions?

Mr. MORRILL. We have had to do so, because we have already had to put a man in charge and place three inspectors at Atlanta, Ga., two in North Carolina, and one is traveling in the northern section of the country. I can only judge by what is going on now. We are issuing, as I have said, one license per day at the present time.

Mr. ANDERSON. I would like to get a job inspecting these grain warehouses.

Mr. MORRILL. You may be interested to know that it is not simply an inspection of the physical condition of the warehouse. The man who makes the inspection of a warehouse, it is true, must inspect the physical condition of the warehouse, determine its capacity, and to see that it is suitable for the storage of grain, but he must, in addition to that, go over the accounts of the warehouseman to see that he keeps them in proper shape, and ascertain his financial standing by going to the bankers.

Mr. ANDERSON. They are scattered around so that a man could spend a long time traveling over the country to inspect them.

Mr. RUBEY. What do you pay the inspector?

Mr. MORRILL. We have two men in Washington at \$2,500 a year who travel—that is, they handle the administrative work and travel. We have one man at Atlanta, Ga., at \$2,100, two at \$1,760, and one at \$1,500, and we pay two men in North Carolina in cooperation with the State, our part being \$1,800 in one case and \$1,200 in the other case. They travel on a per diem allowance of \$4. In looking over the reports of our inspectors, I found that some of the inspectors were away from home something like 25 or 26 days in each month, riding around the country districts, jumping on freight trains and getting buggies and that sort of thing to go around in. I might say that the actual increase we are asking for is \$35,000. Although the appropriation for the past year was \$35,000, we had \$30,000 of the original continuing fund, and all that money will be spent this year.

Mr. ANDERSON. Your actual increase is \$35,000?

Mr. HARRISON. The warehouse act itself carried an appropriation that remains available until expended.

Mr. ANDERSON. You will spend this year how much?

Mr. HARRISON. There is \$30,000 available in that fund this year.

Mr. MORRILL. We will spend \$65,000 this year.

Mr. BYRNES. And you want \$100,000 for next year?

Mr. MORRILL. Yes, sir.

Mr. HARRISON. That makes the actual increase \$35,000, although the apparent increase is \$65,000.

FOR ENFORCEMENT OF STANDARD CONTAINER ACT.

Mr. LIVINGSTON. The next item is No. 92, for the enforcement of the standard container act. This appears as a new item, whereas it is simply transferred from the general expense section of the Bureau of Markets, where it was listed as Item No. 86, to this part of the bill so as to get it located with the other regulatory acts. We are asking for an increase of \$1,000 in this item. The total appropriation in that fund would be \$4,800. It is to be used largely for the traveling expenses. The man in charge of that work must necessarily travel considerably in order to make the necessary inspections.

TUESDAY, JANUARY 4, 1921.

INSECTICIDE AND FUNGICIDE BOARD.

STATEMENT OF DR. J. K. HAYWOOD, CHAIRMAN OF THE INSECTICIDE AND FUNGICIDE BOARD.

ADDITIONAL EMPLOYEES—INCREASE IN SALARIES—PROMOTIONS, ETC.

Dr. HAYWOOD. We have asked for an increase in the appropriation for the statutory roll, which I will take up item by item and explain to you, and have also asked for an increase on the lump-sum appropriation. The reasons for the increase are, first, that from a small annual business of four to five millions when the insecticide law was passed the gross annual sales of insecticides and fungicides in this

country is probably now in excess of \$40,000,000. The business to be controlled has increased some 800 per cent whereas the amount to enforce the law has increased about 70 per cent. Therefore, for this reason alone, it is impossible to control the industry effectively with the present appropriation. In many cases the insecticide board has been obliged to neglect important items of control because it had not the force for the work and has been obliged to see low grade, adulterated, and misbranded insecticides and fungicides go on the market without taking any effective action, because of lack of force caused by lack of funds. This is the first and greatest reason. Secondly, we are exercising control over the purity of the calcium arsenate. The recent discovery of calcium arsenate as a remedy for the cotton boll weevil has opened a large and new field for the sale of this insecticide. Three years ago only a few thousand pounds of this commodity were on the market; last year about 3,000,000 pounds were shipped in the South. During the past season fully 10,000,000 pounds were shipped and it is estimated that next year 20,000,000 pounds will be shipped. Unless this calcium arsenate is of a certain high standard it will not be effective or will burn the cotton to which applied. It is only by the enforcement of the insecticide act that the composition of this insecticide can be fully and legally controlled. During the past season the need of controlling the purity of this product was thought to be of so much importance that all of the inspection force of the board, except one, and a large part of the insecticide board's clerical force was used during four months of the year, and the remainder of the United States had to be neglected during this time. As a consequence many misbranded and adulterated insecticides escaped detection, and even for calcium arsenate the board was only able to officially inspect about 2,190,324 pounds (about one-fifth the amount shipped). This required extended chemical examinations of over 1,534 samples. Unless the board's appropriation is increased, therefore, to allow it to get more help, it will be absolutely unable to control this situation next year. The intensive campaign now under way by the department to demonstrate the use of calcium arsenate will be ineffective unless this material is closely inspected to see that it is of such standard as to efficiently control the weevil and at the same time not cause serious injury to cotton plants.

ACTIVITIES.

Mr. BYRNES. What do you do toward controlling it?

Dr. HAYWOOD. Perhaps I should have started by explaining that the insecticide act of 1910 empowers the department to proceed criminally against manufacturers of adulterated or misbranded insecticides and fungicides, or seize shipments of adulterated or misbranded products provided the goods enter interstate commerce or are offered for import or export or are manufactured, sold, or offered for sale in the District of Columbia or the Territories. The law is enforced by a board created by the Secretary of Agriculture called the Insecticide and Fungicide Board. Practically all calcium arsenate is shipped in interstate commerce to the Southern States. Under the provisions of the law if the product is not of proper strength and purity, we proceed against the manufacturer by criminal prosecution or by

seizure of the shipment, thereby taking the goods out of the channels of trade and away from the unsuspecting consumer. We have been enforcing the law against manufacturers of calcium arsenate, but have not had enough money to enable us to do it effectively.

Mr. BYRNES. You have been seizing some?

Dr. HAYWOOD. Oh, yes; we seized upward of 100,000 pounds this year, and not only that we are prosecuting a large number of cases at the present time.

The third reason we ask for an increase in the appropriation this year is in order to make more use of the seizure section of the act. As times go by and some manufacturers become better acquainted with methods of evading the insecticide act the insecticide board finds that it becomes increasingly important to make more use of section 10 of the insecticide act, which allows the adulterated and misbranded goods to be removed from the market. To make use of this section of the law very prompt analyses and tests must be made of the seized samples and the work of the inspection force is greatly increased, because of the necessity of locating seizable shipments and collaborating with the United States attorney in seizing same. In the inspection work connected with the control of calcium arsenate, sold for cotton-boll weevil control, it is only by seizure action that the board can effectively enforce the law and prevent adulterated and misbranded shipments of calcium arsenate reaching the consumer. Also in case of many other insecticides and fungicides and disinfectants, seizure action is the only action that is effective. With the present inspection and scientific force it is impossible to make the seizures that should be made. The insecticide board constantly finds itself in the position of knowing that goods should be seized but being unable to seize them because of lack of sufficient inspection and scientific force. To effectively use the seizure section of the act the inspection and scientific force should be materially increased. Another general reason why additional funds are needed is the great increase in cost of everything we have to get. During the past few years and still continuing the price of official samples of insecticides and fungicides purchased by the board's inspectors has increased fully 100 per cent. These are almost exclusively chemical products and the price of chemicals has not yet shown the same tendency toward lower prices as have some of the other materials of everyday life. We are not justified in assuming that lower prices for chemicals will be reached by 1922. The cost of shipping samples to Washington has greatly increased and traveling expenses have increased substantially. The increase in expenses to maintain the inspection force and the new inspectors which we hope to get, applies as well to the entomologists, plant pathologists and other employees working in the field. There is as yet no tendency toward lower prices for travelers.

Mr. ANDERSON. Let me see if I understand you correctly: Do you actually make tests on the trees to see if these insecticides perform as they are represented?

Dr. HAYWOOD. We do, Mr. Anderson. The inspectors purchase samples and send them here to us and we test them to find out if they are as represented, and if they are not as represented we report them as misbranded. There will be on one label many claims against many insects; another label will have many claims against plant diseases and we have to test them all to see if they are as represented.

Mr. ANDERSON. Is not the Bureau of Entomology making these tests right along?

Dr. HAYWOOD. Absolutely not.

Mr. ANDERSON. They are constantly trying to find something that will do these things, are they not?

Dr. HAYWOOD. They do, and it helps us a great deal; but when a man makes a mixture of certain chemicals and says it will kill certain insects you have to make a test of it to see if it will do so. We are able many times to say, on the basis of tests already made, whether an insecticide will or will not do what is claimed, but in many cases we are not.

Mr. HARRISON. You might explain how the work is conducted.

Dr. HAYWOOD. This is run as a board and I am the chairman of that board. We work in cooperation with the Bureau of Entomology, the Bureau of Chemistry, the Bureau of Animal Industry, and with the Bureau of Plant Industry.

Mr. ANDERSON. Let us get this straight. Is this testing worked out in the field on these plants and animals, or is it done by you out of your office?

Dr. HAYWOOD. It is done by employees of the board working in cooperation with the Bureau of Plant Industry, the Bureau of Animal Industry, and the Bureau of Entomology. We pay for the actual testing work, but it is done under the supervision of these bureaus.

Mr. BYRNES. What else besides samples do you pay for?

Mr. ANDERSON. These men are paid their salaries; do you pay them something besides?

Dr. HAYWOOD. We pay them their salaries.

Mr. RUBEY. Tell us just what you pay them for.

Mr. BYRNES. You say you are doing these things in connection with the Bureau of Entomology, Bureau of Plant Industry, and other bureaus. You do not pay the employees of the Plant Industry Bureau, do you?

Dr. HAYWOOD. Yes, sir; those that test our samples.

Mr. BYRNES. That is what we want to know.

Dr. HAYWOOD. Employees of the board assigned to the Bureau of Entomology, Bureau of Chemistry, the Bureau of Animal Industry, and the Bureau of Plant Industry are paid out of these funds.

Mr. RUBEY. Are they paid out of some other fund also?

Dr. HAYWOOD. Absolutely not; they simply work under these bureaus but are paid out of our funds.

Mr. RUBEY. One other question; do you require a manufacturer to submit his insecticide to you and you O. K. it as being as represented?

Dr. HAYWOOD. No, sir; the law does not provide for that.

Mr. RUBEY. Why would that not be a good thing?

Dr. HAYWOOD. Because there are many reasons against the Government giving an O. K. for these insecticides.

Mr. BYRNES. But as soon as it is put on the market you proceed to investigate it?

Dr. HAYWOOD. Yes, sir.

Mr. BYRNES. And if you do not take any steps against it, is that not equivalent to an O. K.?

Dr. HAYWOOD. No, sir.

Mr. BYRNES. Does he then state that it has been examined by the department?

Dr. HAYWOOD. No, sir.

Mr. ANDERSON. Even if you O. K. his formula, you still have to examine the goods to see if it comes up to the formula?

Dr. HAYWOOD. Yes, sir.

Mr. HARRISON. The responsibility is placed on the manufacturer to comply with the law.

Mr. BYRNES. Is there no way to avoid purchasing these samples?

Dr. HAYWOOD. No, sir; I do not see that there is any way to avoid that; we can not compel these manufacturers to give the samples to us.

SALARIES.

The next thing is item No. 3 on page 281, "one clerk, class 4." That is for the promotion of a clerk in charge of the accounting work, from \$1,600 to \$1,800. This is a man who has been in the service for six years and thoroughly merits and deserves this promotion. He has an excellent record for efficiency, dependability, and faithfulness. He is an all around office clerk of the highest grade, possessing good judgment and executive ability. The salary he now receives is entirely out of proportion to the service he is rendering and is below the grade of similar positions in the department. For this latter reason the retention of this employee in the position is problematical as positions paying higher salaries are always open for capable and trained auditors. The position was created in 1913 and the salary fixed then has remained stationary. Since 1913 the position has been filled by four different auditors, including the present incumbent. Two resigned to accept outside employment and one died. The \$1,600 salary, which the position now commands, is on a par with the salary paid to second assistant auditors in the auditing divisions of other bureaus in the department where opportunity for promotion exists. This employee is of particular value in the position for the reason that during the nearly six years he has been with the board he has become familiar with the various projects and lines of work carried on by the board, which makes for intelligent and beneficial cooperation between the auditing office and the various officials engaged in the work.

The next item is for two clerks, at \$1,400 per year, an increase of one clerk from \$1,200. This employee is a very conscientious and excellent clerk. She is a fast and accurate stenotypist, and has shown exceptional capacity for handling large quantities of work which involve technical difficulties. She is acting as secretary to the chairman of the board. She also has supervision over the files and records of the technical laboratory data of the chairman of the board, also of the insecticide and fungicide chemical laboratory. She is very capable and her experience in the work enables her to perform intelligently many details of the work without close supervision. During the time of the war, when she could many times have gone to another department and gotten more than she is now receiving, she stayed with us, and I think that she thoroughly deserves this promotion.

In item 8 you will notice we have dropped two clerks, at \$1,000 each, but to understand that you will have to read items 10, 12, and 14. Item 12 drops two clerks and sample collectors, at \$1,000 each. These recommendations are made for the purpose of rearranging the roll so as to eliminate low-salaried positions, which prevents the use of the funds to the best advantage. No increase in expenditures is involved, and the change should be made on the basis of good administration and a better utilization of public money to secure the maximum results. It is believed that the change will greatly increase the efficiency of the work and will enable us to obtain the type of employee necessary in the work.

Mr. ANDERSON. Are they vacant now?

Dr. HAYWOOD. Not exactly; two are filled by temporary clerks. The positions have been filled off and on, but we are unable to keep the clerks if they are any good or are compelled to let them go, because they are incompetent. We are now trying to fill the vacant position with a satisfactory employee as services are needed to take care of our current work.

In regard to item 9 this employee thoroughly merits and deserves this promotion. He has an excellent record, and during eight years' experience in the work has become familiar with the board's attitude in all phases of this inspection work. He is exceptionally well qualified for inspection work, possessing personal attributes, such as initiative and good address, coupled with resourcefulness, tact, and good judgment. The territory assigned to him includes Arkansas, northern Mississippi, Tennessee, Kentucky, St. Louis, Mo., and nearby places; Ohio, Michigan, Indiana, Illinois, Wisconsin, and Minnesota. He is exceptionally energetic and industrious, and this has been a material aid in enabling him to cover this large territory, but the important factor in his success is his ability to cultivate and develop the spirit of cooperation essential in the work on the part of dealers, wholesalers, manufacturers, railroad officials, and employees. He is not paid anything like the salary that is paid food and drug inspectors and if you will bear with me I want to read into the record a letter this gentleman wrote us, under date of November 23, 1920, in which he says:

I have recently given considerable thought to a question which, I believe, quite naturally arises in the mind of a man every eight years or so, even though he is employed by the Department of Agriculture, and that question is: When am I going to receive an increase in salary?

You know, Mr. Shibley, I can not help thinking that any hope of an increase by appropriation at the coming session of Congress is but a forlorn one. Please be assured that I know Dr. Haywood will do everything in his power to convince the committee of Congress that an increase should be allowed. You will recall that last year the estimates contained a recommendation for my promotion and that all increases in statutory salaries were excluded on the assumption that the matter would be taken care of by the reclassification of salaries then under way. You will also recall that early in the year I expressed to you my intention to resign or transfer and was persuaded to continue with the board in the hope that the reclassification bill would be passed by Congress.

I am appreciative of the fact that you have used all reasonable effort to secure a raise for me in the ordinary way, and I assure you that this is not intended in the light of a complaint in that connection. I can frankly say that it has been a real pleasure to work for you, but it has gotten to the point where I can not much longer discard all self-respect in remaining at my present salary.

I am writing to see if there is any way in which an increase can be granted me by, say the first of the year, under the lump-sum roll. I have not anything definite in mind that I expect to go to at the present time, but if something can not be done for me on the salary proposition, I shall be compelled to resign or transfer to some other branch of the service at the first opportunity.

Now, gentlemen, that was not a requested letter. He wrote from his heart and the way he feels is the way you would feel, the way any man would feel who was doing the same kind of work that man is doing. He has been seven years in that position without a raise in salary. We have four insecticide and fungicide inspectors here at \$1,600 each, one of which represents a transfer from the lump-sum roll at \$1,600; then we have promoted one from \$1,600 to \$2,000 (item 9) and a new place is added which offsets this. This new place and that in item 11 are recommended in lieu of items 12 and 8. This will involve no increase in funds and will provide adequate salaries which can more readily be utilized.

The next is item No. 14, "one laboratory helper at \$1,200." It is recommended that this be changed to "laboratory helper," as this change in title more clearly indicates the class of work performed by this employee. He has custody of the many thousands of samples and subsamples of insecticides and fungicides examined in the chemical laboratories and of the chemicals and apparatus used in the work. All his spare time is devoted to usual laboratory helper work in which he is exceptionally proficient; having been with us six or seven years.

We are asking in item No. 15 that one laboratory helper be increased \$160 per year. The man who is doing this work is exceptionally efficient, being dependable, thorough and very much interested in the work. The salary he is receiving is very much less than salaries paid other employees in the department performing similar work. He is a married man and in order to retain his services in the face of much more lucrative positions it is necessary that he be given an increase in salary.

In item No. 18 we are asking that a laborer be increased \$300; that is from \$600 to \$900 per year. This employee is in charge of the cleaning and laboring work of the Olive Building. He is exceptionally dependable and faithful in the performance of his work. During the nearly three years that he has been with the board his record has been excellent in every respect. He is handy with tools and takes a special interest in making minor repairs of various kinds as required in the building. He is a married man and we believe the best interests of the department will be served by giving him a salary which will fairly compensate him for the work he is doing and which may retain him in the position he now holds.

Mr. BYRNES. I thought you had one man who was an exceptional case but all of your cases seem to be exceptional ones.

Dr. HAYWOOD. You must remember that our statutory roll was established on July 1, 1916, at which time the employees covered by it were transferred thereto without any increase in salary. No increases have been granted in any of these positions since that time, nor have there been any new positions created which would permit a line of promotions. In the same period employees on the lump-sum rolls in this and other bureaus have received increases. In addition to the employees mentioned above for promotion there are a

number of others on our statutory roll who merit increased compensation in recognition of their efficiency, and it is well known that the morale of any organization will be seriously impaired if no such recognition is accorded over a long period of time.

Next is item No. 19, laborer, an increase of \$360 per year is asked for him. This employee is on duty at the insecticide testing laboratory of the board at Vienna, Va. He is a very faithful, capable, and dependable employee and during the nearly six years he has been at the Vienna station he has developed from an ordinary laborer into a man skilled in the performance of several lines of work. His duties consist in operating the tractor in plowing, cultivating and application of spray materials, looking after animals and chickens used in testing experiments, pruning trees, driving an auto truck and making minor repairs of various kinds and other miscellaneous labor. He is a married man and in every way merits and deserves this promotion.

Mr. ANDERSON. I notice you have a tabulated statement on page 284 in which you show an increase from \$10,000 to \$17,430.

Dr. HAYWOOD. I want to make a slight correction in that table. We show an increase for salaries from \$70,740 to \$79,500 and that should be from \$70,740 to \$82,000 or \$83,000 because we are going to need a considerably increased personnel; four or five new chemists, an entomologist, a plant pathologist, and an extra inspector whom we expect to appoint under the lump-sum appropriation and which will bring salaries for 1922 up to about \$83,000, and which will decrease the "traveling expenses" and "equipment and material" about equally, and the figures to which you refer would then read about \$15,430 for equipment and material.

Mr. ANDERSON. An increase of about \$5,000?

TO ESTABLISH A TEMPORARY LABORATORY.

Dr. HAYWOOD. Yes, sir. First of all we will have to establish down in Louisiana, during the cotton-growing season, a temporary laboratory where we will work for about four months of the year.

Mr. ANDERSON. Why do you have to do that?

Dr. HAYWOOD. We have to do that because it takes us so long to get the samples to Washington for examination. If a shipment is adulterated or misbranded prompt action must be taken to effect seizure.

If we do not act quickly and make an analysis quickly and promptly report it back to the United States attorney who makes the seizure, it escapes and gets out into trade, and we want to have a laboratory there for four months of the year that can make these analyses quickly and get them to the United States Attorney right there on the ground. We do not actually expect to hire a new laboratory and equip it, but borrow laboratory space from the Bureau of Chemistry, that already has a chemical laboratory at New Orleans, and equip such space for our work.

Mr. BYRNES. The Bureau of Entomology is asking for an appropriation which will enable them to establish an experimental station at two or three points outside of Louisiana, and urges that different climatic conditions will have a different effect upon the

method of the handling of this insecticide. Does it mean that you want to establish a laboratory at every station they have?

Mr. HAYWOOD. It certainly does not mean that, and it does not mean that we want to establish a permanent laboratory there at all. The Bureau of Entomology does not have chemical laboratories. I am referring to a chemical laboratory. It only means that we are going to borrow space from the Bureau of Chemistry in a laboratory station the Bureau now has there. The Bureau already has laboratories there under the food and drugs act. We plan to borrow from them the use of one of their laboratory stations, but we will furnish necessary equipment and send chemists there to do the work during the season when the calcium arsenate is being shipped. The samples of calcium arsenate collected by our inspectors will be sent to this laboratory and the chemical examination work centralized there.

Mr. BYRNES. But they have a laboratory now in Louisiana?

Mr. HAYWOOD. The Bureau of Chemistry has one.

Mr. BYRNES. The Bureau of Entomology has one?

Mr. HAYWOOD. Yes; but that is not a chemical laboratory.

Mr. HARRISON. That is experimental work upon the methods of controlling the boll weevil, and studying the effect of the application of this method.

Mr. BYRNES. And you want to establish one there, too?

Mr. HAYWOOD. Not to establish a similar laboratory; no, sir. We want to go down there for a temporary period of four months and do chemical work in the laboratory of the Bureau of Chemistry.

Mr. HARRISON. You mean at New Orleans?

Mr. HAYWOOD. Yes.

Mr. ANDERSON. Where do you pick these samples up?

Mr. HAYWOOD. We pick these samples up mostly in Texas, Louisiana, Georgia, Mississippi, Alabama, and, to a less extent, in Oklahoma, South Carolina, North Carolina, Arkansas, Virginia, and Tennessee.

Mr. BYRNES. You pick them up all over the cotton belt as the boll-weevil progresses?

Mr. HAYWOOD. Yes; but the boll-weevil is much worse on the west side of the cotton belt, and therefore we pick up more there.

Mr. HARRISON. The reason for that is that the farmer in that region has a better understanding of the situation than in some others that are as far removed as the Tallulah country.

Mr. BYRNES. There are two sides to that. In the first place, the old fellow knows how to form his own judgment, and he does not take everything that is handed to him. In the old States he gets wise on the subject and he does not fall for everything that is advertised. He has had experience.

FOR PREVENTING MANUFACTURE, ETC., OF ADULTERATED OR MISBRANDED
PARIS GREENS, ETC.

Mr. HAYWOOD. But the calcium-arsenate situation is a really serious situation, because very large quantities of this calcium arsenate are being sold. Ten million pounds went to the South last year, and it does a great deal of injury if not of the proper standard. There have been so many shipments of adulterated and misbranded

calcium arsenates that the whole campaign down there that the Bureau of Entomology is carrying on to introduce calcium arsenate as a remedy will be ruined if the consuming public are going to purchase substandard calcium arsenate.

Mr. BYRNES. We all agree on that. The only question is how much money is necessary to spend for that purpose.

Mr. HAYWOOD. Well, I estimated about \$5,000 extra approximately would be used for "equipment and material." I estimated that it would take \$4,000 to equip that laboratory down there and \$1,000 for increased cost of other necessary equipment and material such as worn-out farm machinery, etc.

Mr. BYRNES. To carry on the work you want to carry on down there?

Mr. HAYWOOD. Only for "equipment and material" but not for the extra chemists that we expect to employ, because they come in this item up above—salaries.

Mr. ANDERSON. How many firms are there making this calcium arsenate?

Mr. HAYWOOD. Well, calcium arsenate, just that single insecticide, is made by 25 firms; 20 or 25, I can not give the exact figure. And we expect that these 25 companies will send 20,000,000 pounds of calcium arsenate to the South this year.

Mr. ANDERSON. Where are they located?

Mr. HAYWOOD. Cleveland and Toledo, Ohio; Milwaukee, Wis.; New York City; Detroit, Mich.; Chicago; Reading, Pa.; Middleport, N. Y.; Boundbrook, N. J.; Brooklyn; Jersey City; Baltimore; and one or two men in some of the other States, but just where they are I do not know.

Mr. WASON. You have a formula for this, have you not?

Mr. HAYWOOD. Yes, sir.

Mr. WASON. Why does not the Government, instead of letting this stuff get out and be shipped by them, put a man in to inspect it at the factory?

Mr. HAYWOOD. Mr. Wason, that would be the finest idea in the world, if the law were written that way, but the law is not written that way, and we can not enforce it in that way. The law says that we shall take the samples after they have entered into interstate commerce and shall examine them and find out if they are adulterated or misbranded. I would like to see the law changed so that we could inspect at the source, but that would be a much more expensive procedure than at present. I will tell you why. There are about 25 manufacturers of calcium arsenate, but there are also 2,500 manufacturers of other insecticides and fungicides, and we would have to have chemists at all these places. How are you going to get around it? If you send a chemist to one manufacturer the other manufacturers have a right to expect you to send a man to examine their goods, too.

Mr. WASON. I can answer you. If we can pass a law along the lines you and I were talking about, we would pass a law that no insecticide shall be manufactured for interstate commerce without a permit from the Government, and then we would hold them to

the 25 and your Brooklyn and Jersey City manufacturers would not need an inspector.

Mr. HAYWOOD. That is just for calcium arsenate; but there are hundreds of other insecticides.

Mr. BYRNES. You mean there are other preparations other than calcium arsenate?

Mr. HAYWOOD. Yes; Paris green, lead arsenate, Bordeaux mixture, animal dips, insecticides for poultry, lime and sulphur preparations, disinfectants, and hundreds of other things.

Mr. BYRNES. It does seem to me like you ought to have somebody here following the thing along.

Mr. HARRISON. The meat inspection is made at the source, and it costs \$4,000,000.

Mr. HAYWOOD. This would cost more than that. It is true that it would be more effective. If you want to take care of 2,500 manufacturing places you have got to appoint a great deal larger force than we have or that we could think of appointing under any such small appropriation as this. I would like to see that law passed.

Mr. WASON. Well, as it looks to me, you are just making a grab here and there. You are not controlling the situation, and there is any quantity of people in the South that get their stuff that is of no use to them, and their money is gone.

Mr. HAYWOOD. I think you are more or less right on that.

Mr. WASON. Of course.

Mr. HAYWOOD. It is not possible for us to really control this large industry with the funds now at our disposal. But we go to work and we examine manufactured goods. To be sure, we can not examine every shipment that a manufacturer turns out, but when we examine and seize a shipment of goods and prosecute the manufacturer he is much more careful of the next batch he turns out. After we have prosecuted him, after we have seized his goods, and especially after a court judgment has been rendered and published, his competitors use the court judgment to his detriment with regular and prospective purchasers of his goods. He is given notoriety that he does not like, and he is more careful in the future.

Mr. WASON. Ten years ago I would agree to your statement regarding the effect of publicity, but I do not quite subscribe to it now, because I think there is generally a friendly feeling existing between the most of these manufacturers.

Mr. HAYWOOD. Of course, that is the fault of your law.

Mr. WASON. No; that is the growth of the concentration of interests into groups. It is not only true of manufacturers, but it is true of everything else.

Mr. HAYWOOD. What I meant was that it was the fault of your law that we could not enforce it in the way that you speak of; but, of course, that is up to Congress. That is not for us.

Mr. WASON. You are following along certain lines. I am talking about a comprehensive survey and control of the situation.

Mr. HAYWOOD. I would be delighted to have it the way you speak of.

Mr. ANDERSON. Is there anything further, Doctor?

Mr. HAYWOOD. Nothing further.

FEDERAL HORTICULTURAL BOARD.

STATEMENT OF DR. C. L. MARLATT, CHAIRMAN.

TRANSFER OF EMPLOYEES FROM LUMP-SUM ROLL.

Mr. ANDERSON. I notice that the first item that you have is for the transfer of an assistant from the lump fund to the statutory roll. Is this your assistant or an assistant to the secretary of that board?

Mr. MARLATT. In regard to the general administrative clerical force of the board, all these transfers are of additions made to take care of increased work.

Mr. HARRISON. Some of them are transferred from the item on page 286 and some from of pink bollworm item, which appears under the miscellaneous section.

Mr. ANDERSON. Has that pink bollworm got into the class of permanent appropriations? What I mean is that if this pink bollworm is a continuing item, there may be some reason for transferring the clerks over to the statutory roll, but if there is a probability that that pink bollworm work is going to be finished, there is not much reason for transferring those clerks over to the permanent roll.

Mr. MARLATT. We would prefer not to transfer them, but we are required to make such transfers.

Mr. ANDERSON. If I can find out what the facts are you can transfer or not so far as we are concerned.

Mr. MARLATT. I can tell you briefly what the possible future is of that work. This pink bollworm work will not be finished in a year or two; it is much too big a proposition for that. It will be going on if we are successful, as we certainly will be if we get adequate State and Federal cooperation for a period of 5 to 10 years—more likely 10 than 5; but the appropriations for that work, if it is adequately supported at the beginning, should be much less each year. You will recall that last year we asked the agricultural committee for a much smaller appropriation than before, under the belief that we were pretty well along with the work. If we lose out and the insect gets out of hand the work will probably come to a sudden end as to the major part of the appropriation; that is, that used for extermination; it will then become a research and farm control problem.

Mr. ANDERSON. These transfers were incidental to your lump sum last year, and the clerks which have been carried in this pink bollworm item?

Mr. MARLATT. Yes, sir. We are asking for no new positions in this list.

Mr. ANDERSON. You have an increase of \$50,000 in item No. 21. Tell us about that.

TO REGULATE THE IMPORTATION OF NURSERY STOCK, ETC.—TO ESTABLISH AND MAINTAIN QUARANTINE DISTRICTS.

Mr. MARLATT. Item No. 21 is the general expense item for the Federal Horticultural Board. In other words, it provides for all the work of the board—all of its administrative work other than that covered by special appropriations. Some of the special ap-

appropriations are administered by the board, such as the pink boll-worm and potato wart appropriations, and others are assigned to the Bureau of Plant Industry, or to the Bureau of Entomology, but enforced as to the quarantine and regulation of movement of products by the board in cooperation with these bureaus.

This general expense item covers the administration of some 28 foreign quarantines; that is, quarantines restricting or prohibiting the entry of foreign plants and plant products and some 12 domestic plant quarantines, such as the pink boll weevil, moth, and Japanese beetle quarantine, etc. Of these 40 quarantines, or regulatory orders, only five of them are taken care of by the special appropriations referred to; that is, the pink bollworm, the corn borer, the Japanese beetle, the Gypsy and brown-tail moth, and the Mediterranean fruit fly quarantines. That leaves 35 quarantines and restrictive orders that are taken care of under this general expense item.

The board also cooperates under that fund with the Bureau of Plant Industry in the work that that bureau is doing with control of citrus canker, the take-all and flag-smut diseases of wheat, the extermination of barberry plants throughout a large part of the wheat-growing section, and the pine blister rust.

Mr. ANDERSON. We increased this item last year from \$47,000?

Mr. MARLATT. That was to cover another important phase of the work under this general item, namely, the port-inspection work of the board. This port-inspection service is being organized at the principal ports of entry for the purpose of enforcing these numerous foreign quarantines in cooperation with the Customs Service and in making such examinations as may be necessary of the plants and plant products that come to these ports. It involves not only the inspection and control of entry of the products actually under quarantines, and which are permitted entry under restrictions of various kinds, but it involves control of the traffic in the prohibited products that may come to our ports en route for other countries. Ships may come to our ports, for example, loaded with cotton seed which is prohibited entry and it may be necessary to tranship such seed, and such seed must be safeguarded at our docks or during transshipment. Again, prohibited articles may come for transshipment through the country in bond, and inspections must be made and safeguards taken as a condition for such shipments. Such shipments of cotton seed have come into Norfolk several times. The ports of Norfolk and Newport News are entirely within the United States, and cotton is grown to the south of those ports within a few miles of the harbor. You will recall that the German prize ship *Appam* came into Newport News, and on that boat were 300,000 bags of infested cotton seed. Examination of this seed indicated the need of promptly destroying it, and in spite of the remonstrance of the German officers in charge we succeeded in getting possession of the seed, and conveyed it by lighter to a near-by fertilizer factory and had it converted into fertilizer. The docks were swept clean and the ship was fumigated.

A great many ships come to our ports in the ordinary course of commerce with products the entry of which is prohibited. In many such cases it is necessary to enforce the closing of hatches, and sometimes the ships must be fumigated to prevent the escape of insects.

There is also a large risk from ships' stores, from fruits and vegetables of all kinds that may be part of the ships' stores, and from

which insects can escape during the time such ships are lying at our docks. That is particularly true in regard to any ships coming to Pacific coast ports from the Orient, and also with ships coming to our southern ports, such as New Orleans, and other southern ports, from the West Indies and from Central and South American countries.

We established a service at New Orleans last year, and have intercepted and destroyed some hundreds of important pests which otherwise might have gotten into the country. It is necessary often to make inspection even of passengers' baggage. Many things have been intercepted in passengers' baggage that are prohibited of entry. Only two States in the Union are cooperating actively with us in this port inspection service. For 25 or 30 years California has been maintaining such a service at her own ports for the protection of the State and at a cost of over \$50,000 a year.

Florida during the last five or six years has established a similar service. The Department of Agriculture takes advantage of these services in these two States. We are spending very little money in this work in California or Florida. Officials of these States have been appointed collaborators of the Department of Agriculture and are doing most of the work at those ports for us as officials of the department, under such appointment. That is saving the Government the expenditure of an amount equivalent to that which the States are now spending, perhaps \$100,000 a year or more, and we are getting that amount of efficient service at little cost. But with the exception of these two States there is no such port-inspection service in the country, other than that supported by the Federal appropriation.

We asked last year for \$100,000 to extend that port inspection service. The increase this year of \$50,000 is for a different purpose.

Among these numerous quarantines that we are enforcing is one which controls and restricts the entry of foreign plants and seeds, known as the nursery stock quarantine or quarantine No. 37. This is probably one of the most beneficial quarantines the department has promulgated; in fact, the necessity for control of entry of plants and seeds was the main consideration which lead to the enactment of the plant quarantine act in 1912. Most of the imported pests of agriculture and forestry have come into this country with shipments of plants and seeds. As an illustration, during the four years that the plant quarantine act was before Congress, from 1909 to 1912, four very important pests gained entrance to this country: Viz, the citrus canker, the potato wart, the corn borer and the Japanese beetle. All four came in between 1910 and 1912, just prior to the passage of the act. You know what we are asking now for the control of those pests. The citrus canker has already cost in actual appropriations of money, State and Federal, \$2,000,000. In addition to that, I am informed that orchards and nurseries have been burned up to the value of \$11,000,000 in control work in Florida and other States. That is the cost to this country in a few years of one of these pests. We hope to exterminate it. It is practically exterminated now in Florida. In connection with this port-inspection work, during the last three years, we have intercepted half dozen efforts to bring in surreptiously stock and fruit of citrus infested with canker. Any one of these efforts might have been the agency for

the establishment of this disease in California or elsewhere thus undoing the work already accomplished at such great cost of money and property.

Quarantine No. 37. restricts the entry of foreign plants to the absolute necessities of horticulture, etc. The principle of quarantine is to exclude all foreign plants for which an actual need can not be shown; that is, importations of plants that we can grow just as well ourselves. We permit the importation of certain plants which we do not produce in this country and in the entry of which there is comparatively little risk. We permit the importation of fruit stock essential to apple orchards and pear orchards which are not yet adequately produced here, and we exclude commercial shipments of practically all the others. Provisions are made, however, for the entry of anything which we do not have, in the way of new flowers, plants, or fruits, for the purpose of starting in this country the production of such plants, flowers, or fruits. In other words, such entry is allowed only for the establishment of new plant-production enterprises, and to build up horticulture in this country and thus become free in time from further foreign importations and therefore to a large extent free from the risk of introductions of new pests. There have been issued some 1,500 permits since the quarantine was formulated a little over a year ago for a good many millions of plants for such introduction purposes. New enterprises of this character have been started in some 20 or 30 States. All of this material we have required to come to Washington and pass through our inspection house, to be thoroughly inspected and, if necessary, disinfected. We have at Washington a body of expert inspectors, pathological and entomological. We have not funds to develop such a service at any of the ports of entry like New York, where the bulk of the stuff comes in. The chief objection to this quarantine has been on account of this requirement that all this material shall first come to Washington. This \$50,000 is for the purpose of meeting that complaint and establishing such an inspection service as we now have in Washington at the principal ports of entry—New York and San Francisco. Other ports of entry could be handled in connection with the Washington inspection office.

Mr. ANDERSON. I have the impression that at the time this station was established at Bell, Maryland—

Mr. MARLATT (interposing). That is quite a different thing: that is largely a departmental introduction station.

Mr. ANDERSON. I got the impression that that was also a station where this nursery stock was introduced.

Mr. MARLATT. It was the intention to divert, if we could, this inspection, which is now being made under very crowded conditions in the corner of the department grounds, where we have two or three little temporary buildings, to Bell, Md. But, pending the development of the Bell, Md., station, this work of inspection has been carried out at the department, and for the bulk of the material handled such transfer to Bell, Md., now seems to be undesirable. It would simply add another item of transfer and another delay to the shipments.

The importers and many plant societies and associations interested in flowers and in ornamental horticulture have been insistent in their

demands that this inspection be provided for at the ports of entry, so that the goods may be examined immediately and go directly to the importer.

Mr. ANDERSON. I have a rather distinct recollection that one of the advantages urged and one of the reasons for the establishment of this station at Bell, Md., was for the purpose of making the very inspection we are talking about here.

Mr. MARLATT. You are right about that, Mr. Chairman, but it was under the belief of the inadequacy of the existing facilities and that we would do all the work at Washington; Bell, Md., being practically Washington. In other words, that all the special permit material from abroad should come to Washington so as to utilize the existing trained corps of inspectors that we have here.

Mr. HARRISON. I understand that, in many cases, the material is brought here and has to be grown; that the stocks actually have to be raised to a certain stage of maturity in order to determine whether they carry plant diseases, and the Bureau of Plant Industry is doing that work for the Horticultural Board.

Mr. MARLATT. Some of the material may be rare or valuable enough to keep in that way in quarantine, and the Bell station will take care of such importations. This station is, however, primarily related to the department's own importations, as I understand it. The Bureau of Plant Industry is cooperating with the board in furnishing assistance in the matter of care and housing of commercial and other importations, pending inspection.

Mr. ANDERSON. As I say, I remember at the time this Bell, Md., proposition was started as a part of this quarantine business, it struck me at that time that it was a strange procedure to bring all the stuff coming into New York, Boston, Tampa, and every other place into Washington for inspection and quarantine, but it was insisted at that time that it was the way to do it; and we have done it, and if we are going to change that, there will have to be an awfully good reason.

Mr. MARLATT. I am sorry we have not a representative of the Bureau of Plant Industry to put us straight on this matter. So far as the board is concerned, I know the method we have followed, and I recall also the general discussion of the Bell, Md., plant, which was for the continuation of the method of having everything come to Washington. The idea then was to get a place where we would have room not only to build sufficient buildings to house the work, but to do just such experimental work as Mr. Harrison has suggested.

Mr. HARRISON. This plant detention also was intended to take care of departmental importations. The complete exclusion of so many plants that were formerly imported, and the regulation of the importation of others has made it all the more necessary for us to grow our own stocks. As I understand it, we are using the plant at Bell, Md., to test out the stocks secured from abroad in order to determine whether they are disease free before we undertake to introduce them or to grow them at the various plant-introduction stations.

Mr. MARLATT. There may be a confusion there between the two different ideas. One of the results of this quarantine, No. 37, was

to cut off the introduction of a lot of material from abroad. As I stated a moment ago, we still, however, permitted the entry of certain fruits stocks. The Congress was asked by nurserymen and by the department to give a fund for the experimental work in the production of fruit stocks in this country. Whether that had anything to do with the Bell, Md., station I do not know. But there was a special fund for that, and the work is now being done by the Bureau of Plant Industry. But, as I recall it, this Bell, Md., plant was merely to be an enlargement of the plant here—the importations to be taken to Bell, Md., because of the lack of facilities here. But, as the handling of these importations has actually worked out in practice, we have found it possible to handle practically all importations at Washington.

Mr. RUBEY. Has it been your policy all the time to bring all this to Washington for inspection; has that been the regulation?

Mr. MARLATT. It is a requirement now, or regulation.

Mr. RUBEY. I say, how long has it been a regulation or requirement?

Mr. MARLATT. For 15 to 18 months, since June 1, 1919.

Mr. RUBEY. That is, ever since quarantine has been in force?

Mr. MARLATT. Yes.

Mr. BYRNES. It looks to me like a very poor way of handling material.

Mr. MARLATT. As I have stated, the chief objection to the quarantine has not been to the principle underlying it but to the sending of the stock to Washington, and this is perfectly natural, in view of the expense involved, and the additional risk of loss of vitality of the plants.

Mr. BYRNES. That is a very important part of it, the shipping from various parts of the country here.

Mr. MARLATT. The department has very expert men, and the handling of the material here is very prompt.

Mr. RUBEY. You mean to say that in importing something from San Francisco you bring it here and then send it back to California?

Mr. MARLATT. No; California is an exception. We have already made an arrangement to utilize the State experts in California and by putting one expert there ourselves—a pathologist—we, for nearly a year, have been examining at San Francisco all of the importations of that kind that are destined for use in the western territory. With anything that comes through San Francisco en route to the East it is optional whether the examination be at San Francisco or Washington.

The requirement of sending the bulk of such importations to Washington is not one that the department approves as the best course; it is one necessitated by poverty in funds.

We can utilize here in Washington a corps of trained men who are probably the best inspectors in the world. To get an equivalent corps of men or even a much less number for work in New York, where the bulk of the stuff comes in, would cost a great deal of money. But if the money is granted, the department will be very glad to provide for such inspection at New York and will make the San Francisco station more adequate in the interest of these importers and to get rid of this criticism which is, in part, justified.

The importations not thus taken care of would still come to Washington and be handled either locally or at Bell, Md., in connection with the department's own plant importations. The introductions of new plants by the Department of Agriculture probably now very much exceed those of all other plant-introducing agencies, including introductions by the leading botanical gardens of the country. A recent estimate has shown that these departmental introductions have amounted to 50,000 different importations or shipments of plants during the last 25 years, representing more than 10,000 different kinds of plants.

Mr. RUBY. Can you not accomplish that by transferring some of these experts to New York?

Mr. MARLATT. This Washington service is tied up largely with the department's own importations. It will also take care of all importations at the sundry other ports where we can not afford to put competent service. It undoubtedly can be reduced here, if the main importations are taken care of in New York and San Francisco.

There is one gentleman, as I am advised, who has given \$20,000—I am sorry he did not give it to the board, but I think we are prevented from accepting funds of that kind, however—who wants to have that money spent to arouse sufficient interest in the country to enforce an inspection at the ports of entry. He is a large amateur importer of orchids.

In point of fact, we have been wanting since we have been able to determine the actual working out of the quarantine to have the inspection made at the ports of entry. We realize as well as the importers the disadvantage and the risk that comes from sending all this material to Washington and then sending it back again, hence the request for funds for this enlargement. We have now under this item of general expense, \$125,000. This will just carry the work as it is now organized to the end of the year without any balance to speak of. It gives no opportunity for enlargement, and the board's work is growing very rapidly. We have a half dozen or more new quarantines to enforce every year.

Mr. ANDERSON. Would the expense normally be reduced any by establishing these port stations, after they once got established, by having the inspections made there and without having the stuff sent down here to Washington, or would there be no difference?

Mr. MARLATT. There would be no difference as to the cost of the actual inspection or disinfection, but in general it would be more expensive because the rentals would be higher and the costs are greater in New York City, for example, where our main force would have to live. That would have to be taken care of in the salaries of the men assigned to New York. A man can live in Washington, perhaps, a little cheaper than in New York. Rentals are cheaper here.

In a word, there are two distinct considerations involved with these importations of foreign plants under special permits. The first has relation to the bulk of the importations referred to, namely, those requiring mere inspection and occasional disinfection, and these should be promptly handled and promptly forwarded to destination. It is for this class that we wish the increase to make it possible to do this inspection and disinfection work at port of entry. Furthermore,

such importations are bonded for a period of from one to five years, during which period they are under the inspection and control of the department, and this replaces the original detention plan except for importations which are under some definite suspicion of carrying contagion.

The second consideration has relation to occasional importations representing a small proportion of the total entered under such special permits which will require detention to determine conditions of freedom from infestation by insect or disease. For such detention the station at Bell, Md., will be used.

PLANT INSPECTION AND DETENTION STATION, BELL, MD.

For the information of the committee, and supplementing the testimony above given, I am inserting a statement from the Bureau of Plant Industry which gives the history of the origin of the appropriation for the plant inspection and detention station at Bell, Md.:

Informal recommendations to the chairman of the House Committee on Agriculture resulted in the insertion of an amendment to the item for seed and plant introduction. This amendment was lost on a point of order; and later, in asking for further consideration of this item by the Senate Committee on Agriculture and Forestry, the following statement was made:

"In accordance with the recommendation to the House committee, it is desirable to recommend as follows: Strike out '\$82,700' and insert: '\$137,700, of which sum the Secretary of Agriculture is authorized to expend \$55,000, or so much thereof as may be necessary, for the purchase of not to exceed 50 acres of suitable land near the city of Washington, D. C., and the erection thereon of all necessary buildings and equipment, for the establishment of a plant-inspection and detention station: *Provided*, That not to exceed \$15,000 shall be expended for the purchase of the land: *And provided further*, That the limitation in this act as to cost of farm buildings shall not apply to this paragraph.'

"The Office of Foreign Seed and Plant Introduction receives from 3,500 to 4,000 lots of seeds, bulbs, plants, scions, grafts, and other plant material annually. All this material must be inspected and treated, and most of it is then passed out to the field stations of the office. Considerable quantities, however, must be grown and propagated under quarantine conditions before it is safe to allow it to go. With the growing interest in restrictive measures as a means of protecting our valuable crop plants against insects and other enemies, and especially in view of plant quarantine order No. 37, which, when it becomes effective on June 1, will prohibit the importation of many living plants from foreign countries, there has developed a pressing need for better facilities for conducting the plant inspection and quarantine work. Through cooperation with the Federal Horticultural Board, tentative plans have been developed for the Office of Foreign Seed and Plant Introduction to act as a clearing agency in the handling of all new plant material that the board, under the provisions of quarantine No. 37, may permit to come in and be grown in this country by commercial agencies for the purpose of building up horticultural industries similar to those now conducted abroad. New crops originating in many parts of the world will be allowed to come in under careful restrictions in order that they may form the basis for new industries. The greater part of this work will fall largely upon the plant introduction, inspection, and detention facilities of the Office of Foreign Seed and Plant Introduction.

"It will be necessary, in this connection, for the entomologists and pathologists of the Federal Horticultural Board to develop many new lines of treatment for such plants as nursery stock, bulbs, roots, etc., in bulk. Very little has been done along this line and very little is known regarding the immediate and after effects of the treatments on stock packed for shipment. Obviously, the department grounds are unsuited for work of this kind. There is not sufficient room, and it is handicapped by the proximity of other lines of plant activities which might be jeopardized. The same is true with reference

to the Arlington Farm. The Rockville field station, which was originally intended as a purely plant propagating station, has, owing to its nearness to Washington, become a sort of adjunct to the plant introduction, inspection, and detention work on the department grounds. It would make for greater efficiency in all directions if the work at Rockville and the work now done here could be consolidated and carried on at some suitable and convenient place near Washington but remote from other lines of work where plants are being grown, propagated, and distributed by the department.

"Specifically, what is needed for the work in question, including the cooperative activities with the Federal Horticultural Board, is a tract of approximately 50 acres of suitable land conveniently located to the workers in the Department of Agriculture. The land should be well adapted to the growing, testing, and propagation of the many kinds of seed, plants, bulbs, and other similar material that will have to be handled. It should be properly equipped with inspection and treatment rooms, laboratories, glass houses for the growing, under control conditions, of many kinds of tropical and subtropical and other plants that will form the nucleus of new agricultural and horticultural industries, frames, lath sheds, etc., for out-of-door propagation and observational work, suitable quarters for a superintendent and other assistants, and also a barn, storage cellar, and the like.

"It is estimated that it will require \$55,000 to secure the requisite land, erect the necessary buildings, and fully equip the station as follows:

For necessary land (from 45 to 50 acres)-----	\$12, 500
For inspection rooms, fumigating and treatment rooms and laboratories-----	12, 000
For greenhouses and propagation houses (15,000 square feet)-----	15, 000
For concrete propagating frames, protecting covers, sash, etc-----	1, 000
For lath sheds, for outside propagating and plant growth-----	1, 000
For water supply, irrigation pipes, and overhead watering devices-----	5, 000
Fencing, preparation of land, etc-----	1, 500
Cottage for superintendent-----	2, 500
Cottage for assistant superintendent-----	2, 000
Storage cellar, barn, tool shed, etc-----	2, 500
	<hr/>
	55.000

"It is urgently recommended that this sum be included in the appropriation act for the next fiscal year."

Mr. ANDERSON. All right; take up the next item, if you are through with that, Doctor. There is no increase in No. 22

FOR EXTERMINATION OF THE POTATO WART.

Mr. MARLATT. That is the potato-wart appropriation—no increase in that is asked.

Mr. ANDERSON. We reduced that item last year. Can we reduce it a little more this time? I am trying to find you some money to put over in this other item.

Mr. MARLATT. I hope you will be able to find it elsewhere, Mr. Chairman, as I shall point out later. The potato-wart item is one that I do not think is going to be a continuing proposition. I think, however, it ought to be continued on its present basis for another year. The outlook of the work with that disease is very encouraging. I am glad to give you some encouragement. The world is not coming to an end to-morrow in the case of the potato. We will still have potatoes to eat, so far as the wart disease is concerned, for all time. But there has been no potato disease which has caused so much alarm as this one. It was specifically mentioned in the quarantine act of 1912 as one of the things to be quarantined against. It got into this country during the period when we were discussing the act, before it passed, in huge shipments of potatoes in the winter of 1911-12.

Mr. BYRNES. What are you doing in regard to it, Doctor?

Mr. MARLATT. In the first place, we are determining its distribution; then we are determining methods of control. The State of Pennsylvania is cooperating with us in the most wholehearted and thoroughgoing manner—putting up money, and men, spending as much or more money as we are in this matter. The result of this work has been the delimitation of disease to certain extended areas in Pennsylvania, much more limited areas in West Virginia, and in Maryland. In other words, the disease is apparently not country wide in its spread, as seemed possible at the outset, because these importations in the winter of 1911-12 went all over the country. But following up all clues and making thoroughgoing surveys last summer seemed to indicate the disease is only in the States mentioned. The point of special interest, as probably already brought out by the Bureau of Plant Industry, is that the majority of our potatoes proved to be immune to the disease. In other words, we have enough important varieties of potatoes immune to the disease to insure the perpetuation of the potato crop in spite of this disease.

Mr. BYRNES. How essential is it to carry on this work next year, then?

Mr. MARLATT. We are developing our knowledge of this immunity. We are working out, in cooperation with the States concerned, the elimination of the growth of nonimmune varieties. In Europe, also, certain varieties are known to be immune, and some of these have been imported by Pennsylvania authorities, in cooperation with us, and seed stock of these immune varieties of potatoes are being grown for planting in the infested districts of Pennsylvania and West Virginia. Research work with the disease is being prosecuted; that is, determining the biological features to enable us to control this disease in the United States in the future. It is a big proposition. We are just in the midst of the work, and it would be most unfortunate to materially stop that work at this time. Whether it will need \$35,000 next year or not, of course, I can not state. But I should regret very much to see that amount reduced again this year, because it is really a very big problem and one which we are working out very successfully.

Mr. BYRNES. By July 1 I was hoping you would complete it.

Mr. MARLATT. The work is giving such a promising outlook that I think it is a good idea to let it go along another year and give us a chance to finish it, and I think next year we will be willing to consider a very material reduction.

PINK BOLL WORM OF COTTON IN MEXICO.

Mr. HARRISON. The next is on page 303, Item No. 12.

Mr. MARLATT. The committee will recall that last year the department recommended a reduction of this item of the pink bollworm fund to \$225,000, nearly cutting it in two. The House committee even went better than we did and reduced it to \$125,000. The reason for the recommendation of that reduction by the department was due to the fact that the outlook for the extermination was so good that we thought that we would not need so much money. We have always looked upon this item as a sort of emergency fund.

which should be available for use, but which might not be expended. In point of fact, we have not at any time, except last year, spent anything like the total appropriated. But just about the end of 1919, and in the beginning of 1920, you will recall that the insect was found in three parishes in Louisiana and that it began to reappear scatteringly in the old Trinity Bay district in southeastern Texas. That unexpected development necessitated a resumption of the method of clean up to exterminate it, and we came before Congress—the agricultural appropriation bill then being before the Senate—with a request for an increase of \$300,000. That increase was carried by the bill as it left the Senate, but in conference it was reduced to \$200,000. So, in fact, we got last year \$325,000 for the practical part of the work—the clean-up and control of the work in the States of Texas and Louisiana.

That work has been underway actively. The development of the situation has been such that the fund is not sufficient. It is a long story. I do not know whether the committee wishes me to go into it. The reappearance of this insect in Texas and the outbreak in Louisiana led us to take up the matter of cooperation with these two States. We held a conference in New Orleans with the principal cotton men and interests of the State. The conference developed enthusiastic support from all the leading men of that community, the governor of the State and the governor elect, and representatives of the cotton associations. Everything was promised; both legislation and funds. Individuals offered a fund, if the State would not give it, out of their own pockets to any necessary amount. As a matter of fact, the State kept all of those promises; it gave legislation, declared an absolute embargo on the growth of cotton in three parishes, and that embargo has been enforced and the people have cooperated. State quarantines were declared as to some five towns in the State which had received seed from these districts, so that all the cotton grown within 10 miles of the mills receiving such seed has been under surveillance and under quarantine during the year, and all products have been shipped to foreign countries via New Orleans and none consumed in this country. The State appropriated \$225,000 for the work, nearly as much as the Federal appropriation at that time, and has carried out its end of the work in as thorough-going a manner as I have ever seen similar work done before by any State.

Texas, on the other hand, was rather remiss in her efforts. Some planters and others got the idea that there was not very much in pink boll worm. The Federal and State work had, in fact, nearly exterminated it in two districts. In one of these, the Pecos Valley district, but one worm was found, and that dead, after the first year. In the other, the Hearne district, there has been no reappearance at all in three years. In the Trinity Bay district, which is the big district, even larger than the State of Rhode Island, cotton is not being grown over much of the area, and the infestation is still scattered and the losses small. A noncotton zone was maintained in that district for one year—1918; the following year the growth of cotton tentatively was permitted and the insect reappeared, as just noted, in December and January of 1919–20. The State had promised a reestablishment of the noncotton zone if the insect reappeared. Strong opposition to such action was started by planters and others, principally real-estate men. Ultimately the department induced the governor of Texas to call

a special session of the State legislature to get more adequate legislation and to appropriate funds. The Secretary of Agriculture promised to address the legislature, but was prevented from doing so by illness, and I presented the address for him. On urgent request of the governor, I with two other members of the board, spent a week or 10 days working with the legislature to draft an adequate pink boll-worm law. We were opposed by the legal talent of the State, employed by some of the people who were trying to prevent the renewal of the non-cotton zone plan.

The bill which was drafted by this faction was considered during most of the 30-day period of the special session and was legislation which was entirely inadequate and would, if enacted, have driven the Federal work out of the State. But finally it was thrown into the scrap basket and the bill approved as to general terms by the department was put through, but so hastily that it went through very hastily.

While this bill does not give us the full power the State ought to have as to noncotton zones and quarantine features the people of the State have really supplemented that legislation by cooperation with the Federal and State authorities so that where the law has not been operative, it has been made so substantially by such cooperation. There is therefore now as good an outlook for the extermination of the pink bollworm as there ever has been, and if the State and the citizens of Texas do what they ought to do, and what we hope they will do, we have still a good chance of exterminating this pest.

I would like to say with regard to this pest that this fall, the governor of Texas, in view of the feeling perhaps that the experts were exaggerating the damage to be anticipated from it, appointed a commission to go to the Laguna, the principal cotton district in Mexico, to see for themselves what this insect meant and what it signified to the cotton crop of this country. This commission included some six or eight of the best-known men of Texas—representatives of boards of trade, cotton associations, and farmers' organizations. It proceeded to the Laguna district and went out into the cotton fields and made minute and personal examination of these fields.

They did it just as our inspectors might have done it; they went into those fields, and at a given signal each man pulled up a cotton plant next to him and then an exact count was made of the bolls and damage. The result of their examinations was reported to the governor. It was to the effect that this pest had caused in 1920 a damage to Laguna cotton of 50 per cent of the crop. They placed the damage even higher than our own experts who had gone over the ground and who had reported about 40 per cent damage. This commission further reported that the climatic conditions in the Laguna were sufficiently similar to those of the South to leave no reason to anticipate there would be any less damage in the United States than they saw in Laguna. That report made a great impression on the State of Texas, and the chances are we will have in the future much better cooperation and will be able to carry out the work which ought to be done in that State.

Mr. HARRISON. One of the most effective arguments against the efforts of the department was that the insect was an old insect; that it had been there for years and had not done any damage.

Mr. MARLATT. This commission cured that idea. The new law failed to give us the old noncotton belt along the Rio Grande, and a little cotton has been grown at various points along the Rio Grande, and we, of course, have no legal control over it, because it is an intrastate matter. But the people of those districts have given us control just as though there was quarantine over those districts.

Mr. BYRNES. How large is the noncotton district?

Mr. MARLATT. The southeastern district in Texas surrounds Trinity Bay and involves a land area probably nearly as large as the State of Rhode Island. In the other old invaded areas in Texas, as already noted, the insect apparently has been exterminated. These are the Pecos and Hearn districts.

The only new area in Texas that has become infested is in the Rio Grande Valley near El Paso. This is a new cotton development of the last two years, and there was every reason to believe the insect would appear there following the planting of cotton, because all of the cars coming out of Mexico to Juarez are fouled with infested cotton seed, and the chance of flight of the insect across the river is large. There is only one possibility of a future cotton industry in that district, and that is by such cooperation by Mexico as will provide that all cars will be cleaned thoroughly and disinfected in the interior of Mexico and before they come to Juarez. Such cooperation with Mexico may now be possible under the more stable government which we hope is being established.

Mr. ANDERSON. Just where are those infestations? As I recall, some are at Trinity Bay and El Paso. Is the infestation still in Louisiana?

Mr. MARLATT. As to Louisiana, the three parishes which were originally invaded have been maintained as a noncotton zone and all volunteer cotton has been destroyed. The insect in those parishes is probably now practically exterminated, but this noncotton zone will be maintained certainly for two years. There has been only one new appearance of the insect in Louisiana, namely, near Shreveport. Shreveport is one of several towns which have been kept under quarantine and restriction. This infestation is traceable to cotton seed that moved from one of the infested parishes last year to a mill in Shreveport, and the insects escaped to near-by fields. The infestation is very slight, and the State of Louisiana has established a noncotton zone for that district also, involving, by the way, some of the finest cotton land of the State. As I remarked a while ago, the State of Louisiana is willing to go the limit and leave nothing undone to attempt to exterminate this pest. The limited area at Shreveport is therefore the only known point of infestation this year (1920) in Louisiana.

As to Texas there were two areas of infestation in 1920, viz: The Trinity Bay area and the El Paso area. As just noted the insect did not reappear in the two other older areas. The Trinity Bay area has been greatly reduced, but it is a vast area and requires a great deal of inspection and control. The El Paso district extends up the Rio Grande into the first county in New Mexico, involving a new State.

All of these districts, including those where the insect did not appear in 1920, have got to be inspected every year, and that inspec-

tion is one of the principal items of work. The clean-up of infested fields is a matter of labor cost. Such clean-up of fields is a necessary part of the control work in Louisiana and in the Trinity Bay district of Texas. It will not be necessary to clean up the fields in the El Paso area because this is an isolated district, and if the States of Texas and New Mexico declare a noncotton zone and all volunteer cotton is destroyed the insect will die out. There are some hundreds of miles between that district and the next cotton culture. But the Trinity Bay and Shreveport districts are surrounded by cotton-growing sections and must be cleared of all old cotton this winter, and we are now asking Congress to give us an emergency appropriation for that purpose. You will recall that last year we asked for a \$300,000 increase, but were given \$200,000. It now develops that this \$300,000 were really needed. The funds still available will not carry the existing organization and work to the end of the fiscal year, and the Secretary of Agriculture has asked for an emergency appropriation in connection with the urgent deficiency bill of \$100,000 to complete the work of this fiscal year, including this new area at Shreveport. I think you have probably all seen copies of this letter. [Referring to letter of December 8, 1920, addressed to the Secretary of the Treasury by the Secretary of Agriculture.]

That is entirely apart and separate from the item which we are now considering for 1922.

Mr. ANDERSON. That will make seventy-five thousand and odd dollars more next year than for this year.

Mr. HARRISON. It will make the total pink-bollworm appropriation this year \$588,560, compared with \$666,660, the amount we are recommending for next year.

Mr. MARLATT. This appropriation is largely in the nature of and should be looked upon as insurance—that is, an emergency appropriation. There is always the possibility of new outbreaks to be taken care of. A reasonable margin beyond known needs should be available for such emergencies. We hope we will be able to turn into the Treasury a considerable part of that appropriation, but from the present outlook we have reasonable need of such an insurance fund as that indicated.

In relation to work of this kind—and I think it is hardly necessary to make that point to this committee—the work must be done promptly or the opportunity passes. Research or education work can be deferred, but any quarantine and control proposition of this nature must be taken up and carried out adequately and without interruption or the money spent is wasted and the opportunity for control and extermination is lost altogether. I think the committee appreciates that fully.

Mr. ANDERSON. I think the committee does appreciate it. But we would appreciate it more if the same claim was not made with reference to every item for increase in the bill. Everybody who has an increase to ask for seeks, of course, to put that increase upon some basis of its own, so that it can stand on its own feet and take itself out of the general rule which the gentlemen very properly feel that the committee may apply to it.

Mr. MARLATT. I am engaged, Mr. Chairman, in both educational and research work, and also in this form of control work, in enforce-

ing these numerous quarantines, and in the administration of these big control propositions like those of the pink boll weevil, the citrus canker, where we are really trying to exterminate new pests and hope to succeed. Things of that kind are, in my judgment—looking at both sides of the matter—entirely on a different basis from research and educational work. The interruption of one means merely a postponed opportunity; of the other an opportunity lost.

Mr. ANDERSON. I think the committee have felt, Doctor, that if it was possible to exterminate this pest it was worth while spending the money immediately necessary to accomplish that result, and I imagine the committee would still feel that way, providing there is such assurance that the expenditure of a considerable amount of money now might result in the eradication of the weevil altogether.

Mr. MARLATT. That is absolutely our point of view. This work is not of the kind which should come before you year after year as a continuing proposition. If we are not successful within a reasonable time the opportunity for extermination will disappear. The outlook even in Texas is much more promising now than it was a month ago, as the result of the report of the commission referred to and the new appreciation of the needs in Texas.

TO PREVENT MOVEMENT OF COTTON AND COTTONSEED FROM MEXICO INTO
THE UNITED STATES.

Mr. ANDERSON. I have the recollection that this first item that carried \$148,000 originally assumed that size on account of some construction that was necessary in connection with it; that is, the prevention of importation and fumigation of cars.

Mr. MARLATT. You mean item 13?

Mr. ANDERSON. Yes.

Mr. MARLATT. Item 13 covers the border-control service?

Mr. ANDERSON. Yes.

Mr. MARLATT. There is no increase asked in that.

Mr. HARRISON. It assumed its present size, Mr. Chairman, because of the arrangement we made by which we charged a fee for inspection. We purchase all the materials and furnish the labor, but the fees go back into the Treasury. Some construction work was done, however.

CONSTRUCTION OF FUMIGATION BUILDINGS.

Mr. ANDERSON. You were constructing some large fumigation buildings?

Mr. MARLATT. That is explained on page 304 in the footnotes at the bottom of that page. Most of the \$100,000 increase of that item went into the cost of chemicals, and a minor portion of it into labor involved in the operation of the fumigation plank. That is independent of the overhead or expert directive service. The charge made for this disinfection covers all costs except the expert direction and goes back to the Treasury. In other words, if it were a revolving fund it would not have to be appropriated each year.

We have built at six of the important ports on the border of Mexico plants for the fumigation of railway cars and baggage and

freight of all kinds. The older plan of fumigation of the interior of the cars only was very inadequate and unsafe; and we therefore erected these structures for the fumigation of cars as an entirety. At some ports we have structures for the fumigation of single cars and at others from 5 to 15 cars at a time may be treated. The construction referred to at the bottom of page 304 is of a 15-car fumigation plant at El Paso, where formerly we had a 1-car house. The cessation of Villa and other bandit raids has made it possible for traffic to be resumed through that port from the interior of Mexico, and it is now necessary to fumigate many more cars coming over at this point from Mexico.

Mr. ANDERSON. Has the passage of traffic actually been resumed in the movement of cars between the two countries?

Mr. MARLATT. Yes; that is already beginning.

Mr. ANDERSON. The only question I had in mind was this: I thought in view of the fact that this construction work was apparently completed that it might be possible to reduce this particular item for the border-inspection service.

Mr. MARLATT. This can not be reduced, I am sorry to say, Mr. Chairman. This item looks large because we have no revolving fund.

Mr. ANDERSON. How much came back into the Treasury on this item last year?

Mr. MARLATT. The first year under that increase ending June 30, 1920, covered a period of a little over eight months. For this period upward of \$33,000 in charges for fumigation were turned back to the Treasury. The rate for the current fiscal year is considerably greater and is increasing all the time, so that we may have full need for the funds this year and may even need larger funds for the fiscal year ending June 30, 1922.

We have to maintain on the border about 25 inspectors. There are seven ports covered, and at several of these ports three or four men are required to handle the business. The traffic to be controlled is an increasing one.

Mr. BYRNES. Who pays the cost of fumigation of the railroad cars?

Mr. MARLATT. The shipper, the person whose goods are carried. There has been a very strong effort on the part of border interests to get the Government to resume the full cost. There is nothing to prevent our assuming it except the understanding which we have with Congress that the money will be converted back into the Treasury. The Secretary is given authority to make charges but not directed to do so. The charges are collected from the shipper by a script system. The shipper buys the script, which is based on the charge of \$4 a car, and gives it up with each car that comes in.

Mr. BYRNES. That is to accommodate shippers?

Mr. MARLATT. Yes; and as a convenient matter of record and check on the inspector.

Mr. BYRNES. You do not collect it from the railroad and the railroad collect it from the shipper?

Mr. MARLATT. No; we collect it directly from the shipper, the man interested in the car or his agent at the port of entry. Everything must be entered by some agent or by the shipper himself. The goods are coming from a foreign country and all entry is under control.

This item should not be reduced. The work has had to be enlarged at several ports on account of increased traffic with Mexico and also extended farther west. Formerly it stopped at El Paso, whereas we now have two ports west of El Paso.

TO MAKE SURVEYS AND EXTERMINATE PINK BOLLWORM IN MEXICO.

Mr. ANDERSON. You have \$15,000 additional in item 14?

Mr. MARLATT. That is an item which has been running along in our appropriation at \$25,000 a year. We reduced it voluntarily last year to \$10,000 and did not spend the \$10,000. It is an item to cover cooperation with Mexico in Survey and clean up work in connection with infestations in Mexico, near the border of the United States. Little use other than local surveys has been hitherto possible of that item, because we did not have a stable government in Mexico with which to transact business. Just now representations are coming to us from the Mexican Department of Agriculture urging willingness to cooperate, and we are now going back to the original sum, and hope we will be able to use it efficiently, particularly at a point like that at El Paso, where the control work must be carried out on the Mexican as well as the American side. It is an appropriation which will be spent only if it is possible to spend it wisely. Hitherto it has not been possible to expend it to any useful purpose, and hence it has not been spent. If the opportunity comes, the expenditure of a part or all of the amount requested will be worth many times that much to us in eliminating costs of clean up and expensive control work in Texas or other States. The note on page 303 covers that point clearly, I think.

Mr. ANDERSON. Item 16 is your general eradication work?

Mr. MARLATT. Yes. Item No. 15 is for investigational work. That item was formerly for \$25,000 and under it we conducted for a portion of three years a research station in Laguna, which I think you are familiar with. The result of that work has been a thorough study of the habits of the insect and some important work in connection with local control methods, disinfection of seed, possibility of poisoning, etc., a very useful report which is now going through the press. The station has been practically discontinued, and this item of \$5,000 for investigation is one which should be given as a basis for any other work which we will need to do in the United States or elsewhere in relation to this insect.

We have already discussed the big item No. 16.

Mr. ANDERSON. If this \$100,000 deficiency appropriation is made, will you still need \$200,000 immediately available?

Mr. MARLATT. No. I do not think so, because when these estimates were made the present urgent need had not come up.

FOR EXTERMINATION OF DATE SCALES.

Mr. HARRISON. There is one other small item, a supplemental estimate, with reference to date scale.

Mr. MARLATT. The date industry is peculiarly one which the department is responsible for and interested in. It is a new industry which has been established practically by the work of the Depart-

ment of Agriculture. Unfortunately, with the first importation of dates, made nearly 30 years ago, two date scales, common pests of this plant in Africa and Asia, were introduced; and when the industry began to be developed as really a big fruit possibility in California and Arizona, these two insects came into evidence and were very serious obstacles to the success of the industry. The effort to exterminate the more important of these two insects was undertaken a few years ago in cooperation with the date growers and with this department. The department's cooperation has been to the extent of furnishing one man's services. With this man, who has a wonderful eye for date scales, and who can see them where nobody else can see them, we have made very great progress in the work of extermination. In the meantime, the date industry has been growing by leaps and bounds, and it becomes very desirable that this extermination effort be put through promptly and finished up. We wish to assign two additional men to the work and finish up the job and have it done with in one or two years.

Mr. ANDERSON. Is it a proposition that can be cleaned up and gotten rid of?

Mr. MARLATT. I think there is no doubt of it.

Mr. RUBEN. Then you will not ask for it next time?

Mr. MARLATT. We won't say "next time." I think two years will practically finish it, and then it will come down merely to the basis of inspection at small cost for a year or two longer. I think the great majority of the orchards are now clean, but unless the work can now be promptly completed the insect will be given opportunity to spread again. There is a lot of very careful inspection to be done, and at this stage of the work it is important that these inspections be made frequently, so that any remaining infested plants may be promptly detected and no opportunity left to spread to surrounding trees and thus give a certain amount of uncertainty to the entire orchard. The infested plants are cleaned by burning. The date grows from the inside, and you can burn it to the quick without killing the plant, and in a year or two it comes back. The process is to put a torch to the plant and burn it to a charred stub, and then the bud in the center comes out and you have a new, clean plant. That burning is effective in 95 out of 100 cases, but you have to keep after it to get the other five, and usually two or three burnings will clean up an orchard. Date growing is a new industry and very expensive in its beginning, and in view of the fact that this department has been very largely—in fact, almost altogether—responsible for establishing it, the department and the Congress is justified in giving this comparatively small fund to finish the extermination of its most important insect enemy.

The full statement of the need is given, I think, in this letter which has been submitted.

WEDNESDAY, JANUARY 5, 1921.

MISCELLANEOUS.

**ADDITIONAL STATEMENT OF DR. WILLIAM A. TAYLOR, CHIEF
BUREAU OF PLANT INDUSTRY.**

DEMONSTRATIONS ON RECLAMATION PROJECTS.

Dr. TAYLOR. On page 290, under the head of "Miscellaneous," you will find an item for demonstrations on reclamation projects. This is the appropriation under which all of the agricultural demonstration work on the Government reclamation projects is done. Through this work there is made available to the settlers on the projects, who have purchased their lands from the Government, the information obtained through experimentation with respect to features of agricultural production that are peculiar to the several projects.

COOPERATION WITH STATE AGENCIES.

Mr. ANDERSON. Is this work done in cooperation with any State agencies?

Dr. TAYLOR. It is done in close cooperation with them, but the States do not make any expenditure of funds. The work is lined up with the State agricultural colleges and the extension departments of those colleges, so that there is no duplication or overlapping of extension work involved in this item.

Mr. ANDERSON. Do many of the States maintain men who are engaged in the study of the problems relating to irrigating land?

Dr. TAYLOR. There is considerable work of that character in California; there is some in Utah and Arizona, and there is some in Oregon and Washington. I may say that in the research work on the project we are cooperating definitely and financially in the case of the Umatilla project in Oregon, where the State carries half the total cost of that work, and on the Huntley project in Montana. The intention ultimately is to turn over this special extension work to the States as the settlers become well established and the development of the counties makes effective county agent extension work possible. We have withdrawn during the last year from one of the projects where the conditions made that possible—the Yakima project in the State of Washington.

Mr. ANDERSON. Is this confined to Government irrigation projects?

Dr. TAYLOR. Yes, sir; entirely. The estimate merely provides for the restoration of the amount that has been appropriated during the three fiscal years prior to this one.

Mr. ANDERSON. You intimate that you have had to curtail your work owing to the reduction in the amount of appropriations. In what way was that done?

Dr. TAYLOR. By letting men go and terminating the work on the projects; it was the only way through which we could do it, and it made impossible, of course, the undertaking of work on several projects which now have reached a stage where it is very much needed, except to the extent of a few months of employment of temporary

practical irrigators to instruct the farmers in the technique of irrigation. The purpose of the work is to develop in each project an economically and agronomically sound agriculture, and it requires a rather high-grade type of all-around agriculturist to do it effectively. We have had a heavy turnover in this work through competition with the States in the securing of men, but we have a good personnel to build on. We had to suspend work entirely on three of the projects where it was under way, and to defer undertaking work on three additional ones where the conditions rendered it important that work should be undertaken.

PEAT AND MUCK LAND INVESTIGATIONS.

The other item which I will discuss is item 7, on page 295, under the head of "Peat and muck land investigations." This is a new paragraph and proposes work upon a problem which the department has not yet attacked. The recommendation is the outgrowth of the continuous demand upon the department for fairly definite and significant information regarding the agricultural usefulness of large areas of peat and muck lands, some of which are in process of reclamation, some of which already have been drained but are not yet in agricultural use, and on some of which reclamation is contemplated.

ACREAGE.

Mr. ANDERSON. How extensive are these peat and muck lands and where do they principally occur?

Dr. TAYLOR. They occur to the extent of many millions of acres in the regions of our humid climate agriculture from south to north; the largest body that is in process of reclamation is in the Everglade district of Florida, where there is a large acreage; there are some 4,600,000 acres in Florida; 1,000,000 acres in Louisiana; and in the 17 Northern States where the acreage is more scattered it is estimated at about 12,000,000 acres, Minnesota leading with about 7,000,000 acres.

Mr. ANDERSON. When you refer to humid regions, what do you mean, exactly?

Dr. TAYLOR. I mean in distinction from the dry-farming areas—the territory east of the 98th meridian. It would include eastern North Dakota, all of Minnesota, and all of the territory east of there. The deposits differ radically in their agricultural character and they represent at the present time the largest body of potentially useful land for agriculture that we know very little about. Very heavy investments have been made for reclamation in certain cases where the lands stand, after drainage, practically unused, simply because the owners—many of whom are actual settlers, or desire to be—have not found uses which result in sufficient productive return to justify operation.

CHARACTER OF SOIL.

Mr. ANDERSON. Is this muck soil usually acid?

Dr. TAYLOR. Yes; and within that general category of muck soils belong some of the most productive soils that we have, soils which, with a balanced fertilization and suitable cropping, are extremely

productive, but shading from that highly productive organic type of soil over into very stubborn and refractory peats which, in some cases, shrink badly after drainage, so that the whole question of the ultimate level of the fields has to be taken into consideration in any detailed underdrainage effort that may be contemplated. The problem is one of large importance to our agriculture. It has had very thorough consideration in the department by an interbureau committee under the leadership of the Assistant Secretary, with a view to devising some practical way of getting the fundamental information that is lacking. It is a big activity and, when undertaken, should be undertaken on a basis that will insure its being carried through. The question of its timeliness is a matter of judgment. We are pressed for information, and in the case of very large areas of these lands no one is able to do more than guess at what uses would justify the investment of funds, even by people who own land which has been drained, or practically so.

OWNERSHIP.

Mr. ANDERSON. I take it that not a great deal of this land is now in private ownership.

Dr. TAYLOR. Yes; although that varies all the way from State ownership, through ownership in large blocks by private owners, down to individual 40 and 20 acre tracts in some of the territory, the latter condition chiefly existing in the Everglades, and with ownership located throughout the country.

Mr. ANDERSON. I suppose the situation in Florida is very largely due to energetic exploitation.

Dr. TAYLOR. Undoubtedly, and to the undertaking of a tremendously big activity ahead of knowledge as to what the lands are good for, so that it is a difficult situation that exists. Logically and economically the experimentation should have preceded the reclamation in certain of these very large tracts.

Mr. MAGEE. What is the great necessity for investigating muck land?

Dr. TAYLOR. The muck land feature, as I just mentioned, covers soils ranging all the way from very productive and profitable soils to rather difficult and thus far unproductive soils.

Mr. MAGEE. Muck land is extensive in character and every one knows that it is very rich and fertile land.

Dr. TAYLOR. Certain of it is among the most productive of our agricultural lands; certain of the muck lands, on the contrary, however, have not yet been mastered to the extent of justifying their agricultural use.

Mr. MAGEE. Where are such muck lands located?

Dr. TAYLOR. There are large areas both south and north, but more particularly south.

Mr. MAGEE. In what States?

Dr. TAYLOR. Florida has 4,600,000 acres, Minnesota 7,000,000 acres, and in the 17 Northern States the estimated acreage is 12,000,000 acres. I want to qualify that because those figures cover both mucks and peats.

Mr. MAGEE. That is the point exactly, and I am not talking about peat lands, because that is a different proposition. I am confining my question solely to muck lands.

Dr. TAYLOR. With respect to muck land, there is a wide range from very productive to very unproductive soil.

Mr. MAGEE. Muck soil is black soil entirely, or does it vary in color?

Dr. TAYLOR. Muck soil substantially is black; it runs from black to very dark brown and frequently, particularly in the Northern States, requires only a fertilizer adjustment in addition to drainage.

Mr. MAGEE. They do not seem to require that in regard to the lands with which I am familiar, because on such lands they raise tremendous crops of corn, onions, and everything of that sort.

Dr. TAYLOR. That is true of most of the muck lands.

Mr. MAGEE. I had assumed that muck soils were largely accretions from overflow and that sort of thing.

Dr. TAYLOR. Muck soils are very largely decomposed plant remains which have grown under a swampy and marshy condition through the ages.

Mr. MAGEE. And they get their fertility from the overflows in my section.

Dr. TAYLOR. In some cases, yes; and where you get that you have a perfection of muck soil, for you have enough mineral matter in it to give it the body which makes general cropping possible. The big problem, however, is that of the so-called peat soils, of which the agricultural use has not been worked out, and of which large areas already reclaimed or partially reclaimed stand substantially unused. In some of these districts you find all gradations from a highly productive muck to a thus far intractable and unsalable peat, side by side, so that the problems in many cases cover practically the full range.

Mr. ANDERSON. I know that in some sections of Minnesota this muck soil is used as a sort of fertilizer for the sandy lands that are more or less adjacent to it.

Dr. TAYLOR. Yes. It is, to an extent, in certain sections, dried and shipped for use as fertilizer in intensive cropping, such as vegetable growing, lawn-top dressing, and greenhouse work. But the great body of these peat soils is an agricultural puzzle.

The proposal is to undertake experimentation with the crops that appear most promising in an effort, first, to get at what crops will grow dependably and regularly. In the case of the Everglade territory there is just at present a very extensive commercial effort being made with sugar cane on soil shading from fairly good muck down into a distinctly difficult peat. No one knows whether sugar cane can be made an enduring and profitable crop there so as to justify the heavy investment that would be required for sugar mills. That, of course, is entirely a commercial activity. The largest promise in that region, in so far as crops are concerned, appears to be in the direction of forage crop production. If desirable forage crops are secured. That would mean the development of a live stock industry to utilize the forage. The muck soils there are highly productive and located in a climate that is suitable for the production of winter vegetables and truck crops, but can not be utilized to any large extent for that purpose because the consuming demand will not take a greatly en-

larged production of those crops at the out-of-season prices that they require.

Mr. ANDERSON. Your tabulated statement does not give an idea as to what you have in mind. You have three agronomists, at \$3,000 each, and wages of miscellaneous temporary labor.

Dr. TAYLOR. The details have not been worked out. What is contemplated is the undertaking of about three experimental activities; the amount provided would not permit of more, and the probability is that in most cases, if not all, close cooperation with the States in which the work would ultimately be located could be arranged. The department has not been in a position to discuss details at all with the States, and that is substantially as far as the proposal has gone. It would be necessary to secure specific tracts of land, which could be used for a considerable time, for the study of the reaction of these soils to cultivation and cropping. The question of the shrinkage that will follow their drainage and their tillage has to be worked out.

MISCELLANEOUS ITEM.

Mr. RUBEY. You have a miscellaneous item of over \$21,000. Is not that rather a large amount for an experiment of this kind?

Dr. TAYLOR. No; not when you consider that raw lands would have to be taken, broken and prepared, as well as equipped, in some cases, with small pumping units to establish the conditions of drainage that would exist if the general area should be reclaimed, and some temporary buildings, which almost certainly the department would have to provide.

Mr. RUBEY. A good deal of that work would come under wages, so that your miscellaneous expenses would cover temporary buildings, and what else?

Dr. TAYLOR. It would need to cover such travel as would be necessary and such implements as would be necessary. It is a proposal which thus far is merely blocked out in the rough and which would require intensive study to develop in detail.

Mr. HARRISON. While Dr. Taylor is here—because he is interested in the items—I will ask Mr. Rawl, with your permission, to discuss items 5 and 6, on pages 293 and 294.

FRIDAY, JANUARY 7, 1921.

COOPERATIVE FIRE PROTECTION OF FORESTED WATER SHEDS OF NAVIGABLE STREAMS.

Mr. ANDERSON. The committee will take up this morning the supplemental estimate submitted by the Secretary of Agriculture, dated November 29, 1920, for cooperative fire protection of forested watersheds of navigable streams, amounting to \$1,000,000. Mr. Greeley will take charge of the hearing, and we will hear the gentlemen present in the order in which he desires to present them.

STATEMENT OF MR. W. B. GREELEY, FORESTER, UNITED STATES FOREST SERVICE.

Mr. GREELEY. Mr. Chairman, the estimates originally submitted by the department, contain on page 291, item No. 3, the appropriation for cooperation with States in the protection of navigable watersheds from fire in the same form as carried in the current appropriation, without change in language or in amount. On November 29, the Secretary of Agriculture submitted a supplemental estimate recommending an increase in the amount of this item from \$125,000, as carried by the appropriation for the current year, to \$1,000,000; and recommended also certain changes in language involving a distinct expansion in the policy of the Federal Government. Now, in accordance with the suggestion of the chairman, I wish to ask this committee to consider simply the increase in amount, from \$125,000 to \$1,000,000, without considering the changes in language, since such changes involving an important policy of the Federal Government would doubtless be subject to a point of order if incorporated in a current appropriation bill.

To give the committee briefly a statement of the existing work under this item, I wish to say that during the past fiscal year the Forest Service has cooperated with 25 different States in the protection from forest fires of approximately 150,000,000 acres of land on the watersheds of navigable streams. As against the Federal appropriation of \$100,000 during the fiscal year 1920, the expenditures of the cooperating States aggregated \$860,000. The expenditures of counties and towns, pursuant to the various provisions of the State laws, aggregated another \$200,000; and expenditures by private forest owners within those same States reached a total of approximately \$700,000.

Mr. ANDERSON. May I ask whether those expenditures by private land owners were for the protection of their own lands?

Mr. GREELEY. The expenditures by private owners were on their own lands, or on lands embraced in associations where joint effort was carried on for the protection of the property of members. The Federal Government was then in the position of furnishing \$100,000 for the protection of the forest lands of the country outside of Federal holdings, out of a total expenditure for that purpose of \$1,860,000. The States themselves spent more than eight times as much as the Federal Government.

By the terms of the law, the expenditure in any State may not exceed the funds appropriated and expended by the State for the same purpose.

Mr. WASON. You mean by the States?

Mr. GREELEY. Yes, sir; by the States. In fact, the Federal expenditures were uniformly much less than the expenditures of the States themselves for the purposes of this law. Our maximum expenditure during the fiscal year in any one State was a little over \$10,000; in Maine, as against an expenditure by the State of \$117,000. We spent \$6,000 in New Hampshire, as compared with a State expenditure of nearly \$25,000. We spent \$5,000 in New York, as compared with a State expenditure of \$132,000. We spent about \$6,000 in Minnesota, as compared with a State expenditure of \$104,000, and

so on. In the case of every one of the 25 cooperating States, appeals for additional help in meeting their forest-fire protection problems had to be rejected because our funds would go no further. I will file with the committee a statement of the cooperating States, with the Federal and State expenditures in each case, showing just how the appropriation was used during the fiscal year 1920.

(The statement referred to is as follows:)

Cooperative expenditures, fiscal year 1920, from Federal appropriations and by the States for protecting forested watersheds of navigable streams from fire.

State.	Federal.	State.	Total.
Maine.....	\$10,432.25	\$116,844.11	\$127,276.36
New Hampshire.....	6,073.02	24,739.15	30,812.17
Vermont.....	1,978.00	5,879.46	7,857.46
Massachusetts.....	3,840.75	39,333.60	43,174.35
Rhode Island.....	294.00	1,762.45	2,056.45
Connecticut.....	932.25	4,839.27	5,771.52
New York.....	5,150.37	132,528.56	137,678.93
New Jersey.....	2,120.41	21,703.83	23,824.24
Pennsylvania.....	4,024.24	56,768.61	60,792.85
Maryland.....	1,790.55	4,585.84	6,376.39
Virginia.....	4,650.00	6,886.23	11,536.23
West Virginia.....	5,085.00	10,654.01	15,739.01
North Carolina.....	1,851.04	3,011.13	4,862.17
Kentucky.....	1,739.60	1,705.00	3,444.50
Louisiana.....	1,365.50	2,821.35	4,186.85
Texas.....	2,361.31	4,350.27	6,711.58
Michigan.....	2,110.00	60,586.46	62,696.46
Wisconsin.....	3,518.57	21,942.28	25,460.85
Minnesota.....	6,067.34	104,096.03	110,163.37
South Dakota.....	94.00	3,501.00	3,595.00
Montana.....	254.50	51,549.50	51,804.00
Idaho.....	5,415.50	92,524.37	97,939.87
Washington.....	5,206.00	48,951.34	54,157.34
Oregon.....	6,306.23	28,787.86	35,094.09
California.....	1,995.96	10,196.53	12,192.49
Administration and Inspection.....	8,181.57	.....	8,181.57
Total.....	92,837.86	860,548.24	953,386.10
Unexpended balance.....	7,162.14	.....	.....
Appropriation.....	100,000.00	.....	.....

Mr. GREELEY. In every instance, that fund is expended only in accordance with a plan for systematic fire protection which is prepared by the cooperating States and must meet with the approval of the Forest Service before Federal funds are allotted. More than that, the methods by which the Federal funds are expended is subject to inspection by representatives of the Forest Service to make sure that the money is properly and efficiently spent, and that a good return in the form of fire protection is actually obtained from it. The money is spent almost exclusively for personal services, for the employment of patrolmen, lookout watchmen, and other personnel in the field, for maintaining an actual fire prevention organization on the ground.

Now why is it necessary to expand this work? The 25 States which the Forest Service has cooperated with hitherto contain 65,000,000 acres of forest lands which are still largely unprotected. There are 14 other States with whom we have had no cooperation hitherto but which contain areas of forest lands aggregating 110,000,000 acres, now almost wholly without any form of systematic protection from fire.

In the 39 States, all told, where the prevention of forest fires is a matter of the first importance, there are about 325,000,000 acres of timbered and cut-over land which needs protection from fire, and such protection must be the starting point in any plan for insuring a future supply of timber. Aside from these enormous areas which are now wholly unprotected, there are many other areas where some forest fire protection is now afforded but it is inadequate.

We have obtained estimates from 26 States of the cost of protecting their forest lands. These estimates average $2\frac{1}{2}$ cents per acre, which checks closely with our own experience in the protection of the national forests. In other words, the job of furnishing reasonable protection for the forest lands of the country, outside of the national holdings, represents an aggregate cost of about \$8,000,000 a year. Now, as against this need, the funds furnished from all sources aggregate but \$1,885,000. Toward the total cost of about \$8,000,000 for doing a big national job efficiently, the Federal Government is now furnishing but \$125,000.

Private expenditures for the protection of forest lands are increasing from year to year, and they should increase. They can be increased still more rapidly if public agencies will take the lead in organizing forest protection over large areas and in working out a systematic plan in which the private owners are assigned a definite place. This may be through voluntary cooperation or through compulsory patrol laws, which the Forest Service favors and advocates, as each State shall determine. By such methods the expenditures of forest owners themselves for protection can be very largely increased. The job can be put across if it is given effective leadership, but that devolves upon the National Government.

This is the reason why we come before you with a request for a large increase. The first appropriation for this purpose, made in 1911, amounted to \$200,000. The first year's allotments under that appropriation were but \$60,000. The total expenditures of all the States for forest protection in 1911 were less than \$250,000. Last year over \$1,000,000 was appropriated by the States and other local governmental units for forest-fire prevention. The adoption by the Federal Government of this policy of encouraging the protection of forest lands on a systematic scale with financial aid was largely responsible for this response on the part of the States, representing an increase from \$250,000 to \$1,000,000 in 10 years.

Not only that: During the same period the expenditures for fire protection by private landowners increased from a very low figure—something less than \$100,000—to more than \$700,000. In other words, the funds which private owners are putting into forest protection have multiplied sevenfold during the last 10 years, largely because the Federal Government has taken the leadership in organizing this work and has approached the States and timberland owners with a definite and specific basis for cooperation.

We have been advised by 28 States that appropriations for fire protection will be requested at the next sessions of their legislatures aggregating something over \$1,900,000. These States are preparing for a large expansion in the protection of their forest lands. There are still 10 or 11 other States which should be encouraged to do the same thing. Our experience during the past 10 years shows that the

opportunity to obtain financial aid from the Federal Government is the most effective method of encouraging the various States to take up this work on their own account.

One point I wish to emphasize particularly is that this appropriation is not a means whereby the Federal Government relieves the private owner of valuable timber from protecting his property. In every instance, the entrance of the Federal Government into local fire protection has led to the extension of that protection over enormous areas of second growth or culled timber and of logged-off or denuded lands, which will have no merchantable value for a long time to come. We have insisted in all of our protection plans with the States that, as a basis for allotments, their protective system be extended beyond the areas which now contain timber of commercial value and shall include the much greater areas of cut-over lands on which our timber for the future must be grown. These are exactly the class of lands in whose protection the owner has the least interest; usually he leaves them wholly unprotected. But they are just the lands which must be protected systematically and continuously in the interest of the public.

Furthermore, in every case, or at least in the great majority of cases, the entrance of the Federal Government into State forest protection and the emphasis which we put upon its cooperative character, has resulted in the private owners of timberlands contributing a great deal more to fire protection rather than less. As I pointed out a few moments ago, during the past 10 years the amount of money actually expended by private-forest owners is now at least seven times as much as it was 10 years ago. This is an effective answer to the criticism sometimes made that this appropriation is a means of relieving the owners of timbered lands of the just charges which should be borne by them in the protection of their property.

An appropriation of \$1,000,000 is about 12 per cent of the total cost of protecting our forest lands, outside of the Federal holdings, from fire. It seems to me but reasonable that the Nation, with its very vital interest in the future supply of timber, with many of our most thickly settled agricultural and industrial States dependent upon sources of lumber and other forest products outside of their own borders—in view of those facts—it seems to me but reasonable that the National Government should participate in this task to the extent of 12 per cent. The policy involved is very similar to that embodied in the Federal legislation dealing with public roads and with agricultural extension. In this case, as in those cases, the Federal Government has not waited for the States to make sufficient appropriations before joining with them, but has set aside a sum of money and has defined a policy under which the States are invited to join with it in carrying out a public activity of National and State importance alike.

In fire protection, as in the construction of Federal aided highways, we not only get an increase in the amount of work done through the additional funds made available, but the participation of the Federal Government enables it to establish standards of efficiency which the States must meet. One of the most essential points in our fire-cooperation policy is that we set up standards of efficiency which the States must meet if they are to share in the Federal funds, and

those standards are enforced by inspections every year of the protective work done by the respective States.

Now, in conclusion, I wish to point out that some efficient scheme of fire protection must be the starting point in any plan of timber conservation in this country. Every bill that has been proposed during the discussion of our timber situation within the past 10 years has provided for a nation-wide plan of fire protection based upon the principle embodied in this legislation as its starting point. We are cutting timber out of our forests about four times as fast as the timber is being grown. We have used up three-fourths of our original timber supply and the stock remaining is becoming less and less adequate for the requirements of the country, both in quantity and in location. Sixty-one per cent of what is left lies west of the Great Plains, whereas the bulk of the lumber, paper, and other forest products is consumed east of the Great Plains. Our Eastern forested States have been cut out, one after another, and ceased to be important producers of forest products, because their virgin forests have only very partially and inadequately been replaced by second growth. With the exhaustion of these old sources of lumber and other forest-grown materials, and with the increased distances over which lumber must be hauled to reach the consumer, much of it now across the width of the continent, there is a steadily growing scarcity of forest products. This is gradually becoming more and more critical. Market fluctuations conceal it from time to time, on account of financial and other temporary conditions, but behind these fluctuating market conditions there is a growing scarcity in our supply of timber which underlies, in large degree, the national housing problem, the national newspaper problem, and the difficult situation of many industries which depend upon lumber for their manufactures.

The greatest single cause of this situation is forest fires. It is not due to a lack of forest-growing land, because we have enough forest-growing lands to produce all the timber we need. The country contains to-day about 81,000,000 acres of forest-growing land that is practically idle, and most of it is idle because of recurring forest fires. We still have 245,000,000 acres of cut-over land which contains culled and second-growth timber or young trees, much of it but partially stocked, which represents all that the country has to bridge the gap when our virgin forests are exhausted. From this 240,000,000 acres we are losing, according to the best records which the Forest Service has been able to obtain, from 8,000,000 to 10,000,000 acres every year from forest fires.

That, gentlemen, is the problem that is before us, and in the light of that problem we have no hesitancy in asking that the Federal Government increase its provision for fire protection in accordance with the policy hitherto laid down to the extent of \$1,000,000 a year.

If there are no questions, I will ask the committee to hear the other gentlemen present.

Mr. ANDERSON. I want to get a little better insight into the basis upon which you have arrived at the sum of \$8,000,000 as representing the cost of adequately protecting the timber outside of the forest reserves. As I understand you, that is based on 2½ cents an acre on some 325,000,000 acres.

Col. GREELEY. Yes, sir.

Mr. ANDERSON. The 325,000,000 acres, I take it, include large areas on which there is no merchantable timber?

Col. GREELEY. Yes; cut-over areas.

Mr. ANDERSON. Have you any idea what proportion of it represents cut-over areas?

Col. GREELEY. Out of the 325,000,000 approximately 250,000,000 acres are cut over.

Mr. ANDERSON. In determining this basis of 2½ cents an acre, was that based upon the cost of protection of a given area which also includes a large proportion of cut-over timber?

Col. GREELEY. Yes, sir; that is based upon the estimates obtained from 26 different States, representing between them average proportions of merchantable timber and cut-over lands.

I would like to present Mr. Alfred Gaskill, the State forester of New Jersey, who represents a number of other State foresters.

STATEMENT OF MR. ALFRED GASKILL, STATE FORESTER OF NEW JERSEY.

Mr. GASKILL. I am the State forester of New Jersey and particularly the chairman of a committee appointed by a group of State foresters specifically to present this matter to this committee at this time. I therefore want to speak entirely——

Mr. ANDERSON (interposing). Will you indicate the group to which you have reference, so that the record will be entirely definite?

Mr. GASKILL. I propose, if you please, simply to read the authority that I have, if you do not object to that course. I want to say that I shall speak entirely in my representative capacity. Following the consideration of this very imperative need for further consideration of the future of the lumber supply and of our forests in this country, the men who have been officially charged in their States with responsibility for this matter have felt that they must take the course which was clearly indicated as the wisest one to bring about the results that every one of them felt were not only desirable but highly necessary. Therefore, after a series of meetings here and there during the last two years, they gathered a short time ago in Atlantic City.

Mr. ANDERSON. Has there been any change in the situation within the last year or two that gives rise to this sudden demand for an increase of seven or eight times the present appropriation?

Mr. GASKILL. A change in this respect, Mr. Chairman, that the seriousness of the situation was realized immediately after the close of the war, and at the instance of Col. Graves, then Chief of the Forest Service, the whole question was thrown open as to the course which the country would have to pursue to protect its own interests in the future. It was then realized, perhaps as never before, what we were tending toward, and to that extent the situation has become acute. We have all felt more keenly and closely about it than we ever did before.

Mr. ANDERSON. The situation has not changed, but it is just your realization of the situation?

Mr. GASKILL. That is it, exactly. The situation is one which has been growing on us for years past, and the realization of it has

come about by degrees. One State after another has realized that it had to do something to look after its own interests, but that has not gone, as Col. Greeley has said, to any conclusive lengths.

At the Atlantic City conference there was taken this formal action, which I think I can best represent by reading, as it is very brief:

As a result of a conference of State forestry officials held at Atlantic City, November 12 to 13, 1920, for the purpose of considering the question of national forestry legislation, and attended by officials from 16 of the 34 State forestry departments, we, the undersigned, as heads of the forestry departments in our respective States, fully indorse the recommendations of the United States Forest Service, relating to cooperation with States in fire protection and forest renewal, as embodied in the report on Senate resolution No. 311, known as the Capper report.

We, therefore, urge upon Congress the enactment of the legislation necessary to make those recommendations effective, accompanied by suitable annual appropriations which, for the fiscal year ending June 30, 1922, should not be less than \$1,000,000, to be expended by the Secretary of Agriculture in cooperation with the several States for forest fire prevention and control, forest investigations, and timber production, including forest planting.

That declaration has been signed by the chief forestry officials of Alabama, Connecticut, Illinois, Iowa, Kansas, Louisiana, Maine, Maryland, Massachusetts, Michigan, Montana, New Hampshire, New Jersey, New York, Ohio, Oregon, Texas, Virginia, West Virginia, and Wisconsin, 20 in all out of 31 States which have organized forest services. Since that list was made up I have a letter from the governor of Montana asking me specifically to present the adherence of his State to this program, the State forester having previously signed it. I would like to leave that letter with the committee, as well as the original letters from the 20 State foresters, if you care to receive them.

Mr. ANDERSON. You may file them with the committee.

Mr. GASKILL. That represents a clear preponderance of State opinion. I feel justified, however, in going further and saying that without exception every State organization in the country is behind this program. For one reason or another their adherence to this declaration has not been given in a few instances, but we know from other sources that there is but one opinion amongst the State organizations respecting this policy. For years each of us has been trying as best we could to maintain an organization in our States, in every case based largely upon the recognized necessity for fire control as fundamental. We have gotten from our legislatures all the support that was in any way possible, and we have gained in that support through the very small and very inadequate allotments made from Federal funds. You appreciate, sir, I am sure, that in the effort a State official must make to get appropriations in support of his efforts it counts very greatly for him to be able to say, "This effort of ours is supported by the Federal Government; that other States are with us in this same effort and that we are all working in a coherent way for an end which is not alone our own interest but which is, in large measure, a general interest." As the governor says in his letter to me, the appropriations heretofore made have been so small that they have counted in only a very moderate way in stimulating the States to do the best they could on their own account. Col. Greeley has said further that there are States which

have not yet done anything on their own account in the way of furthering this program of forest development through fire control, and it seems to me that this committee and the Congress can very well consider that the amount contributed does bear a very important relation to the whole result.

A small appropriation accomplishes, necessarily, moderate results in the way of expenditure, but there have been secured, I think, reasonably satisfactory returns for the small amount that Congress has found it possible to appropriate heretofore. We feel in the States that we can accomplish relatively so much more through the emphasis that will be given by this increased appropriation. Frankly, in many of the States the net amount which may be available is only one item of consideration. We must consider—and I think you gentlemen, too, will be inclined to consider—the moral effect of that sort of thing, and the knowledge that Congress is giving such support to the States' own efforts. The point that throughout a large part of the country there is a great area of unproductive land is clearly, to my mind, something that should be the concern of Congress. It is not entirely a concern of the State. We naturally suffer because this land is not yielding any returns to our own people.

Mr. ANDERSON. Let me ask you a question which, probably, I should have asked Col. Greeley: What proportion of this cut-over timber is still in private ownership—most all of it?

Mr. GASKILL. Oh, yes; by far the larger part of it in some States. Of course, very considerable areas have been acquired by the States; in Pennsylvania, for instance, they have taken over something more than 1,000,000 acres of this cut-over land. Easily 95 per cent of the whole is in private possession. The policy, therefore, must be adjusted to the condition as we find it. If we are going to accomplish anything, stimulation to these various private interests, as they are found throughout the country, must be a very important part in the program.

Mr. ANDERSON. I think the situation is that we stimulate them to a point where we make them think the Federal Government is going to do it all and that they do not need to do anything.

Mr. GASKILL. But, Mr. Chairman, as Col. Greeley pointed out, the States are already spending eight times——

Mr. ANDERSON (interposing). I am not referring to the States; I am referring to the people who own this cut-over land.

Mr. GASKILL. I think the answer to that is that the interest of the owners of the cut-over land is, in very many cases, almost negligible. The point we want to emphasize here is that this proposition deals with just those areas which are of vital interest to the community and of comparatively little concern at the present time to their actual owners. It resolves itself, in a measure, to a question of whether the public, through a State agency or a Federal agency, shall take over these lands and administer them for the public interest, or whether the better way is to provide such cooperative means, as through this appropriation, as will secure their productivity in the future.

I wonder if it is clear in your mind that the main part of this effort is to do something with what I sometimes call the coming forests rather than the going forests? It has been represented to you that, in

large measure, it is expected that the protection of the standing timber, the mature timber, shall rest with the owners, but that the protection of the cut-over lands, those which have the beginning of a forest on them, rests, in a measure, upon the public. We have got to look after this thing, as I see it, as a question for the future. Something must be done to provide a timber supply after 40 or 50 years, and this does deal specifically with these areas on which forests are coming. The need for emphatic action and prompt action, in my mind, rests in this: That on these cut-over lands there are now the beginnings of productive forests. Unless fire protection is established and maintained we are going to lose all the value and advantage of what has been gained there, and year by year go further back and lose the young stands from which we should derive the timber of the future.

The point I would like to stress is simply this: That the States find in this program of the Forest Service the most promising means of supporting their own efforts to make timber near where the timber is wanted and to reduce to a minimum the charge upon the user incident to long freight hauls.

Mr. RUBEN. How many States have regular forest departments?

Mr. GASKILL. There are 34 on the list, but 4 of those are not organized in any effective way, so that we can say there are 30 more or less active State forestry departments.

Mr. RUBEN. Take the State of Kansas as an illustration. What is being done in that State by the State forestry service?

Mr. GASKILL. Kansas, necessarily, largely concerns itself with forestation, the establishment of forests upon lands unavailable for agriculture.

Mr. RUBEN. They are interested in the development of forests along the streams and in rough places?

Mr. GASKILL. Yes; in the development of forests along the streams so that they may have lumber at home without having this tremendous surcharge of freight. That work in Kansas, in the very few cases where it has been done within the last generation, has represented a beautiful return upon the investment, and it is one of those exceptional instances where we can get such returns. Kansas is also interested in the progress of her neighbors in forestation and the establishment of forests.

Mr. RUBEN. I can see where you might have some hope of success in States that have forest land, but I can not see much hope of success in work of this kind in a State like Kansas.

Mr. GASKILL. You mean to say it is not likely to be profitable or worth while to establish forests on these poorer lands?

Mr. RUBEN. In my opinion it will be many generations before you will get any returns, if any at all.

Mr. GASKILL. I have seen in Kansas some pretty good forest plantations approaching maturity.

Mr. RUBEN. How long does it take to develop them?

Mr. GASKILL. Oh, 30 or 40 years, but that is no longer than it takes to develop a well-established homestead out there.

Mr. RUBEN. Take a man who owns 40 acres. Do you think you could induce him to put his land in forest for the purpose of getting a return from it 30 or 40 years from now?

Mr. GASKILL. I do not see any reason why he could not be induced to put a small amount of land in forest, provided that land is not

available for agriculture. As I say, it takes him 40 years, with a small acreage, to build up his homestead, raise his family, and accumulate something to leave to his family.

Mr. RUBEN. Do you not think he would be more inclined to put it in pasture and use it for cattle?

Mr. GASKILL. He might, but I think we can show, by mere calculation, that there is more in it for him, counting the labor cost that enters into it—that there is actually more in it for him through forest planting as a long-time investment. That is demonstrable, but, of course, I can not go into it now.

FRIDAY, JANUARY 7, 1921.

STATEMENT OF MR. J. S. HOLMES, STATE FORESTER OF NORTH CAROLINA.

Mr. HOLMES. Mr. Chairman and gentlemen: I only want to take two or three minutes of your time. I represent, besides the forestry department of the State, the Geological and Economic Survey of North Carolina, and as state forester I represent the Southern Forestry Congress as its secretary.

I want, first of all, to speak one minute as the secretary of the Southern Forestry Congress. This is an organization comprising all of the Southern States, with delegates from most of them, and the delegates represent a variety of organizations of the South, the lumbermen, the wood-using industries, the cattlemen, the women's clubs, associations of land owners, and a number of other interests. At the first meeting in Asheville we had some 150 or 200 delegates and they passed a very strong resolution favoring this policy of Federal aid for fire prevention in cooperation with the States. At the second congress, held in New Orleans just a year ago and perhaps more representative of the entire South, being farther in the South, resolutions were again passed very strongly indorsing this policy and asking for increased appropriations.

The States of the South, as perhaps you are aware, contain one-fifth of the Nation's timber, one-sixth of the softwoods and practically one-half of the hardwoods of the country. Over 50 per cent of the total land area of the South is in forest and we are asking this appropriation in order to protect especially the cut-over areas of the South which are now reforesting.

Mr. ANDERSON. Are there any of the Southern States—and I confine it to the Southern States because I assume you know more about them than you do the other States—that have laws under which the cost of fire prevention can be assessed against the lands protected?

Mr. HOLMES. No, sir. There are no Southern States which have gone that far, I am sorry to say.

Mr. ANDERSON. Do you know whether there are any States in the Union which have such laws?

Mr. HOLMES. I think there are some States which have laws under which the cost of fire extinguishment can be assessed against the land. Of course, the taxes in certain areas are used for protecting those areas, for instance, I believe in Maine. I am not so very

familiar with the northern laws, but the South, as you know, is behindhand in this work of fire prevention, and that is the special reason why we feel the Federal Government can help us, not only in the actual work being done in the field by a few States but in stimulating our legislatures to pass adequate laws.

Speaking more particularly for North Carolina, I would say that we have endeavored to secure larger appropriations from the legislature at each succeeding session, but so far we have only been able to secure but \$3,000, which has been spent in the State for fire prevention; to meet that the Department of Agriculture has allowed us \$2,000. However, this \$2,000 has not been of great stimulus to the legislature in making appropriations for this purpose, and we are asking an increase. Ten thousand dollars would have a considerably greater influence on a legislature to meet it and go beyond it in making appropriations for fire prevention. With the amount we have had we have started actual work in the field in a number of different districts and the landowners have cooperated to a considerable extent. I have a telegram from one of the prominent landowners at Linville, which is in the mountainous part of the State, saying that he would be here this morning to show the interest that his association, the Linville Forest Protective Association, has in this work. He has evidently missed the room, because he has not yet arrived. We have three or four other associations scattered over the State, and I am closely associated with them as State forester and represent them here. Perhaps it would be advisable for me to give the names of those associations: The Tryon Forestry Club, the Sand Hills Fire Association, the Linville Forest Protective Association, and the Mount Mitchell Forest Protective Association. Two other associations are in process of organization, but I have not their names as yet.

In answer to your question about taxes, the State of Louisiana has a law, I might say, that imposes a tax on the timber cut which is used for fire protection. That is the only southern State, I think, that has followed Oregon in that respect. ●

These are the only points I wish to bring out before you gentlemen.

STATEMENT OF MR. F. W. BESLEY, STATE FORESTER OF MARYLAND, ALSO REPRESENTING THE MARYLAND FORESTRY ASSOCIATION.

Mr. BESLEY. Mr. Chairman, I am the State forester of Maryland and also the secretary of the Maryland Forestry Association and vice president of the Association of State Foresters. Speaking for the Association of State Foresters, I know that all of them are intensely interested in this proposed increase in the appropriation for fire protection, as has already been stated by Mr. Gaskill. As State forester of Maryland I can testify that the cooperation of the Federal Government in extending aid for fire protection in the State has been of immense advantage. I know that by means of the allotment that was offered by the Federal Government—and I might say that Maryland was one of the first to participate in the cooperation offered by the Federal Government for fire protection—we

have been enabled to secure from the State legislatures much larger appropriations for fire protection. Also our cooperation with the Federal Government in fire protection has enabled us to receive not only financial aid, but also the experience and guidance of the experienced men in the Forest Service in organizing and extending our fire-protection system. I do not want to take up any more time unless there are some questions.

Mr. GREELEY. I will ask Mr. E. T. Allen, of Portland, Oreg., to address the committee.

STATEMENT OF MR. E. T. ALLEN, OF PORTLAND, OREG., REPRESENTING THE STATE OF OREGON, THE WESTERN FORESTRY AND CONSERVATION ASSOCIATION, AND THE NATIONAL LUMBER MANUFACTURERS' ASSOCIATION.

Mr. ALLEN. Mr. Chairman, I represent the governor of Oregon and the National Lumber Manufacturers' Association, as well as the Western Forestry and Conservation Association. I am speaking for the entire industry so far as it is organized, and particularly for the Western Forestry and Conservation Association, which is a league or grand lodge of the timber owners' protective organizations extending from Montana to California. While the State of Oregon and the National Lumber Manufacturers' Association both want me to say that they are for this appropriation absolutely, I think I can contribute more by explaining the protective work of organized timber owners. I think that is a question in the chairman's mind, and I shall speak mainly of the private protective work on the Pacific coast.

We have on the Pacific coast about half the standing timber in the United States, quite a bit of it being in the national forests. The organizations that I represent patrol out of that quantity about 33,000,000 acres, and contributing to that work financially are about 15,000,000 acres. In other words, we patrol a great deal more land than we own.

Mr. ANDERSON. Do you mean that the 15,000,000 acres is additional to the 33,000,000 acres?

Mr. ALLEN. No, sir; it is in the 33,000,000 acres. In other words, the development of the fire-protection work on the Pacific coast conserves the unowned balance along with the part owned. The organization which I represent, for example, is the largest fire-protection agency in the United States, next to the Federal Forest Service. We have been at this for a good many years. We found early in the business that the timber owner can not protect his own land alone, because fire runs, and it has been necessary to extend the protection to the surrounding lands. These patrol organizations each assess its members on an acreage basis in order to do work which covers a territory much greater than that covered by the acreage of their holdings. Many areas included ride free, so we cover practically twice the area that we own. Mr. Greeley, in submitting his figures, stated that the private owners in the United States spend about \$700,000 a year on this work. Mr. Greeley's figures of that sort are naturally based on estimates for a normal year. That is what he uses in making up his budget. As a matter of fact, the organizations

that I represent on the Pacific coast, not taking into consideration similar associations elsewhere, seldom spend less than \$500,000 a year, and in bad years we spend very much more than that. For example, in 1919, we spent \$998,000, of which we have record.

Mr. ANDERSON. How many acres does that represent as actually protected?

Mr. ALLEN. I said we claim to patrol 33,000,000 acres, but I will qualify that by saying that probably 6,000,000 acres of that is land on which we do not do very much, or it is not a very good job. I should say that for 27,000,000 acres we maintain a good patrol, as good as is maintained by any State or Federal Government agency, and often much better. For example, last year, which we considered an easy year on the Pacific coast, there was spent on those areas outside of the national forests over \$685,000 that we know about, and of that amount the private owners spent \$575,000, the States spent \$82,000, and the Federal Government \$27,000. In other words, the Government spent about one twenty-fourth of what the rest of us spent. In the preceding year, or 1919, which was a bad year but no worse than many years, the Government spent about one forty-fifth of what we spent in the same areas. This Weeks law work with us has been very important in developing forest protection, because we early attempted to get the whole thing on a cooperative basis. The timber owners bear the big burden of it. They can not do anything else and the thing to bear in mind all the way through in discussing any of these estimates is that these figures are normal year figures, or figures for use in budgets required to keep up the skeleton of the machine—that is, the patrol organization, the telephone lines, equipment, and that sort of thing. But when there is a bad year and these appropriations are exhausted, money from the States and the Government stops, while the timber owner must carry the load the rest of the way.

Mr. ANDERSON. I think you are in error about that.

Mr. ALLEN. You have deficiency appropriations for the national forests, but I am speaking of areas outside of the national forests.

Mr. ANDERSON. Of course, it is not possible to increase the sums which are available for cooperative fire fighting. That is true, but I would not want the impression to remain that the Government is entirely without means to do anything when the appropriations which are made for the regular service are exhausted and when unusual conditions make it necessary to spend further sums.

Mr. ALLEN. We have not found it to work out that way. We have had some very bad years in which there have been tremendous expenditures and in which we have had to call on the Army. Army maneuvers out there have been stopped entirely and the troops sent into the woods to help us fight the fires, but we have not seen any deficiency appropriations made outside of those for the National Forest Service.

Mr. ANDERSON. I would not say that was not the case.

Mr. ALLEN. Now, it has been asked what changes there are in the situation to warrant an increase. I think there are a great deal more than have been outlined. In the first place, there was never enough spent; second, it costs a great deal more than it did a few years ago; and, third, the hazard is growing much greater, particularly on the Pacific coast. Fire hazard is like the contest between

ordnance and armor plate. We get a better system continually, but also get more population, which, in turn, causes more camping, more logging, etc., all the time increasing the hazard. There is an increasing area of cut-over lands and slash, which produce hazardous conditions. The extension of the protection areas to include reforesting lands is exceedingly important to us.

In allotting this Weeks law money to the States, since it is the Federal taxpayers' money, you retain authority over the fund and prescribe how it is to be spent to some extent. We have thought sometimes that it was rather unreasonable for the State of Idaho, for instance, to spend \$400,000, as it did in 1919, and have the National Government spend only \$3,000, while at the same time in some States you allotted \$3,000 where the State put up only \$10,000.

However, it is entirely proper that the Forest Service should represent officially the taxpayers who must furnish this money. Now, interest in reforestation is growing, and we think the protection should be extended over wider areas—to what we call “no man's land,” out West. That is not altogether cut-over land, but some of it is on the public domain that has not been taken up. It is frequently estimated that about one-half of the land has been burned and cut over in the western section, but I think that is too large an estimate. However, there are millions of acres of “no man's land” in the West which should be protected. In our country reforestation is largely a matter of fire protection. All of us agree it should be safeguarded. But this is what we would then be asked to do unless you help: We would be asked to carry the sack alone over that much larger area. As I said, we now extend our protective work to 33,000,000 acres, and we try to take care of it as well as we can for we know that fire runs. But naturally when fire is burning and we can not get the men, we concentrate the work on the more valuable areas. We pay that cost ourselves, and we hire the men.

Mr. ANDERSON. What do you pay rangers?

Mr. ALLEN. We pay them all the way from \$160 to \$200 per month in private work. Of course, we have to hire a great army of day laborers also. One of our private associations in Idaho has had 1,000 men working on fires at \$4 per day. What I am trying to bring out is that as you use this appropriation without increasing it to extend patrol over a larger part of the country than was patrolled before, then we immediately become bound also under the existing system to extend our work over a larger area than we had before, and bear the entire increased cost of making it effective. I think that if all the money that is asked for, or \$1,000,000, was appropriated we could not possibly hope to get out there in any one of those Western States more than \$50,000 or \$75,000 to put up against an expenditure of three, four, or five hundred thousand dollars a year that we are making now. There will never be any question of passing the load on to you. We expect to have to spend still more ourselves, because you will be increasing the area that we would have to cooperate on. But we are very anxious to have the whole patrol system increased in order to have less fire fighting and less loss, and are willing to pay our share of it.

In most of our Western States we now spend from \$200,000 to \$400,000 or \$500,000 a year. We think too much of that cost is for

fire fighting, and that if we could have a better patrol system there would be less cost to everybody.

Nothing makes so economical and effective a patrol system as to have the National Government, the State government, and the private owners acting in cooperation, but it does not seem quite right to us to be asked to take on cooperative obligations in protecting larger forest areas with an expenditure on our part of several hundred thousand dollars, while the Federal Government puts up only \$3,000 or, at most, \$8,000. That is the most we have ever got in any one State in recent years out there. Oregon, for example, has one-fifth of the standing timber in the United States, and last year Oregon's allotment under the Weeks's law was about \$8,500—or that was the amount in 1919, and I do not believe it is much more this year. As against that, Oregon private owners spent \$323,000 in that year from fire-protection work.

We have the most rapid-growing timber out West, because of climatic conditions, and there are all sorts of reforestation possibilities. We are anxious to have all of them utilized, and we are willing, State and privately, to put up three-fourths of the cost. We think the Federal taxpayer and consumer is interested certainly to the remaining extent, but the appropriation under the Weeks's law has resulted in so many States qualifying that it has been whittled down for each State, and our share is not large enough to do much.

If you wish an explanation of any further processes of this work, I will be glad to give it. I represent some 29 private patrol organizations. Nearly all of this work is done on the same basis. They assess their members the same pro rata regardless of whether they are big men or little men. That assessment is made in the spring, based on a normal year. Then, as the season advances, there are additional assessments made to meet actual needs.

Mr. ANDERSON. According to the acreage?

Mr. ALLEN. At so much per acre, and then as the season goes on we increase that assessment. Of course, that does not mean that the organizations have the same acreage costs. Some of them have easier territory and easier seasons, but they all go down into their pockets and pay whatever is necessary to take care of the fire-protection work. The average expenditure is higher than in any State or Government work, because the State and Government work is limited wholly by the appropriations. We also have compulsory patrol laws in two States, Oregon and Washington, and all the timber owners are obliged to pay their share of it. That is done in the exercise of the State police power, and is based upon the hazard. It does not apply to "No Man's Land" that has no owner, some of which is Government land, although, logically, under such laws we could make the Federal Government pay for its land.

Mr. ANDERSON. Is this assessment based upon the merchantable timber?

Mr. ALLEN. No, sir; on all of the holdings, because it is based upon the hazard. The compulsory patrol law is not insurance, and it is enacted upon the theory that no man has the right to maintain a hazard. The hazard may occur on cut-over land as well as on valuable timber land.

Mr. ANDERSON. That is what I wanted to bring out. I thought that possibly the impression might be created from what you said

that the assessment was based entirely upon merchantable timber land and did not cover cut-over land.

Mr. ALLEN. It covers cut-over land except under this condition: If the land has no hazard, the assessment would not lie. It would not lie if the hazard were removed. We have laws in some of the Western States which require the cleaning up of cut-over lands or the removal of the hazard from them. If a man qualifies under that law, he is exempted from the assessment under the compulsory patrol law. Then, if the hazard comes back, as through young timber growth, the owner automatically goes back under the compulsory patrol law.

STATEMENT OF MR. HARRIS A. REYNOLDS, BOSTON, MASS., REPRESENTING THE NATIONAL FOREST FIRE COMMITTEE AND THE MASSACHUSETTS FORESTRY ASSOCIATION.

Mr. REYNOLDS. Mr. Chairman, I am the secretary of the National Forest Fire Committee and of the Massachusetts Forestry Association, and represent both organizations. I would like to say a word about the national forest-fire prevention committee, which is made up of representatives at present from about 40 States. It was formed last fall at a conference held at Albany, called by the Massachusetts Forestry Association and the New York Conservation Commission. There was a feeling all over the country that something should be done to stop forest fires, and at this conference it was decided to organize a committee which would be composed of representatives of the agricultural, lumbering, and manufacturing interests, as well as forestry associations and women's clubs.

Mr. ANDERSON. I begin to understand the reason for some of the telegrams I have been receiving recently.

Mr. REYNOLDS. I might say that we have not yet completed that committee, and you will probably receive more later on. At any rate, it is not intended that this committee should bring pressure particularly on Congress, Mr. Chairman, but that it should serve a national purpose in their own States, because we realize that in many of the States it is an educational matter. Now, I do not pretend to give you any information from the technical standpoint on this subject. I think you will find practically everything in the so-called Capper report in the way of up-to-date information on this subject. The trouble with the Capper report is that, like most long reports, it is not read, and we have tried to contribute something to you by boiling it down and putting it in concrete form. I have made some curves here which tell the story better than we could by a lengthy discussion.

We attempt to supply a curve representing data obtained from the Capper report and from the old conservation commission. This represents the original supply of timber that we had in this country, plus the timber that has been grown, or, in other words, the total amount of timber from the time the country was formed in 1620. As you will see, it has come down now to about 2,200,000,000,000 board feet in 1920.

Now, it is reasonable to suppose that if we continue to use our timber as we have in the past, that curve will naturally follow the

same line that it has followed for the past 20 years. Now, take the population curve, which is taken from the Census Reports, so that it is absolutely accurate, and you can see that in another 50 years we will have in the neighborhood of 170,000,000 people. Therefore, it is not likely that the quantity of timber required to supply the population will be reduced materially. For that reason we must get more timber. Now, we have taken the information contained in the Capper report, and we have shown that if fires are kept off the present supply we have it can be extended 25 years. When we consider that one in twenty people in this country is absolutely dependent on forestry products for a living, it becomes a pretty important and serious matter. It is really a part of our industrial underpinning. As a business proposition alone, we know that forest fires are certainly bad things. For instance, take the big fire that you had in Minnesota, Mr. Chairman. The timber loss there was about \$100,000,000. That amount of money would have kept all the fires out of the forests of that State for a long time. It is strictly a business proposition to pay money out in stopping forest fires.

There is another thing to be considered. We have had in the last 140 years in this country six wars, or an average of about one war in 25 years. Col. Graves, in a public statement sometime ago in New York, said that if this big war had come on 15 years later we would have had a very difficult time in finding timber to meet our demands. Now, this curve shows that in about 50 years we will be where we will not have much timber left in this country. Of course, everybody knows that as timber becomes scarcer we will use less of it, but that will have a bad effect on all of our industries, and is something we do not want to have to go through with. We can reasonably count on at least two more wars in the next 50 years. If we follow our history in the past we ought to have two more wars in the next 50 years. Seriously, and that is theoretical——

Mr. BYRNES (interposing). And it is pessimistic.

Mr. REYNOLDS. It may be pessimistic; but, seriously, if we go on as a big money power, or if we follow the example of England, we are bound to have wars. Now, this timber shortage is real, and it is a big problem with us. We have never had a shortage in this country of any of our natural resources, and, therefore, we are not used to meeting shortages.

A shortage in potatoes or grain can be overcome in about a year, but a shortage in timber can not be overcome in less than 50 to 100 years. In other words, we have to grow the timber now that our children will cut. It is a case of paying premiums on your life insurance policy. We must do something for the benefit of others in the future. Now, that is one reason why it seems so foolish for us as a Nation that is so dependent on wood to allow our timber to be burned up. As individuals we would not do it. Mr. Allen has just pointed out to you how the big concerns in the West have taken an interest in stopping their own fires; but as a Nation we go on and allow the timber to be burned up, because we have not been affected to the point where we have to prepare for the matter of a timber supply 50 years ahead.

Now, I simply have presented the general proposition as we see it, and the reason why the Federal Government should take a part in

this. It is not a State problem, because the people in the prairie States use timber just as much as we do in the Eastern States. I do not mean that they use as much timber, but they need it just as badly as we do in the Eastern States. The people of the Eastern States would take of themselves because they have got the supply, and the pinch will come to the people in the Western States first.

Mr. WASON. You mean in the Middle Western States?

Mr. REYNOLDS. Yes, sir; the Prairie States, where they have very little or no timber. Of course, it is human nature to think of ourselves first.

Mr. WASON. I suppose you would apply that same principle to the people of the extreme West—that is, they would take care of themselves before helping anybody else.

Mr. REYNOLDS. Yes, sir; and they are doing it. It is costing us as much for freight alone in bringing our timber to Massachusetts as it would cost us to grow the timber, and we are bringing in about three-fourths of the timber we use now.

We woke up about 1911 to the fact that we were having too many forest fires, and in that year we burned up about three-quarters of a million dollars' worth of timber. Then we put in a fire-protective system which shows that fire can really be stopped and to-day we are averaging a yearly loss of less than \$100,000.

Mr. BYRNES. What kind of a system did you put in?

Mr. REYNOLDS. Lookout stations and patrols. That is, Massachusetts is divided into towns or townships and in each town we have a fire warden; then on all high points in the State we have lookout towers and as soon as a fire is detected by the man in the tower he locates it and telephones to the nearest fire warden, in whichever town it is, and he gets out his men and puts it out. If timber can be protected in the most densely populated—except Rhode Island—State in the Union it can be protected in the other States.

Mr. RUBEN. How do you finance that protection?

Mr. REYNOLDS. The State has appropriated, roughly, \$35,000 to \$40,000 a year; it varies from year to year. I think last year's appropriation was about \$35,000.

Mr. ANDERSON. How much timber have you?

Mr. REYNOLDS. Well, I can not answer that. However, I can answer it in acres. About three-fifths of the State is supposed to be better fitted for growing timber than any other crop.

Mr. ANDERSON. How large an area is covered by this protection—the whole State?

Mr. REYNOLDS. Yes, sir. Massachusetts has about 5,000,000 acres, of which we consider 3,000,000 acres timber-producing land, and of that 3,000,000 acres, one-third, or about 1,000,000 acres, is assessed as waste land. This last year the legislature authorized an expenditure of \$3,000,000 for the purchase and reforestation of 100,000 acres. What has been done in Massachusetts we feel ought to be extended to all the States through help on the part of the Federal Government. We are not really asking anything for ourselves, although we would probably get a reasonable share for fire protection, as we have from the appropriation under the Weeks law.

Mr. ALLEN. Mr. Reynolds made the statement that the big owners, as he put it, in the West were willing to take care of their own fires,

but I would not like to have that statement go unchallenged. In the first place, the little owners as well as the big owners are engaged. Secondly, we are willing to take care not only of our own fires but also of the other fellow's fires as far as we can. But we do not want to take care of the whole Nation's problem. The Government should do its part. Its interest is greater than it now pays on.

Col. GREELEY. Mr. Kellogg, chairman of the National Forestry Program Committee, will next address the committee.

STATEMENT OF MR. R. S. KELLOGG, CHAIRMAN OF THE NATIONAL FORESTRY PROGRAM COMMITTEE.

Mr. KELLOGG. I will only take a few minutes of your time, because it is so nearly gone. I want to indorse this measure on behalf of a large number of national organizations, a group of organizations that have recently formed what is called the "National Forestry Program Committee." The organizations which have joined in the formation of this joint committee for this purpose are the Western Forestry and Conservation Association, of which Mr. Allen has spoken; the Society for Protection of New Hampshire Forests, which embraces, I believe, about 2,500 people either born in New Hampshire or with interests in that State; the American Newspaper Publishers' Association, which represents over 500 of the largest and most important daily newspapers in the United States; the National Lumber Manufacturers' Association, which represents all the great lumber manufacturers' associations of the United States; the American Paper and Pulp Association, which represents about 75 per cent of the pulp and paper manufacturing industry of the United States; the Association of Wood Using Industries, which represents a large number of associations of users of forest products in a manufacturing way—chair manufacturers, vehicle and implement manufacturers, and other great industries of that kind; the American Forestry Association, which has a membership of many thousands throughout the United States; and the National Wholesale Lumber Dealers' Association, which represents a large number of the wholesale dealers in lumber throughout the United States.

These eight organizations, as I say, have recently formed, through one representative each, this National Forestry Program Committee, which has prepared and has had introduced in Congress a bill dealing with the entire question of national forest resources, and containing the measures which this committee believes are absolutely essential if the forest land of this country is to be kept permanently productive. One of the critical features of that program is the item now under your consideration. It is the feeling of this committee that notwithstanding the many other things that are absolutely necessary, and which this country can and will do some day to maintain its timber supply, the starting point must be the prevention of fires. It is utterly useless to talk about planting trees or doing anything else in the way of maintaining your timber supply until you stop fires. So, this committee is here to-day and wants to go on record emphatically and unreservedly in support of this proposal to expend \$1,000,000 a year in the way of a Federal contribution for forest protection, and this committee does not think that is one single cent too

much. In coming to that conclusion the committee has taken into consideration the present financial situation that Congress is up against in regard to the reduction of expenditures, the reduction of taxation, and everything of that sort. It does not regard this expenditure in any other light than, as has been well said here to-day, a payment on an insurance premium and an investment in something in which the whole people have a tremendous stake. We know absolutely that something of this kind has got to be done eventually, and we know the country will do it eventually, but it must not wait much longer in starting unless we are to be faced with disaster to some of our great industries and also, as has been well brought out, with possible national disaster if certain things happen in the future that have always happened in the past.

I do not want to take any more of your time because there are a number of other people to be heard, but I simply want to make this statement: That these great national organizations are behind this program and propose to stay behind it until it is accomplished.

If I may add just one word in response to the question asked by the gentleman from Missouri, I would like to answer it in my personal capacity, having both planted trees and used lumber in the State of Kansas, where I lived for a great many years. The interest of the State of Kansas in a program of this national character and in this specific item, of course, is as a large permanent consumer of material which must be produced on the forest land of this country, whether that forest land lies in Kansas or in Maine or in Oregon or in Washington; it must have those products and as a national proposition it must be taken care of and the lead must be taken by the National Government along these lines.

Mr. WASON. Have you any information about the supply of timber in the civilized countries of the Old World; that is, whether they are depleting the supply?

Mr. KELLOGG. In some countries that process of depletion has gone so far that the timber supply situation is almost hopeless. In some countries of Europe, notably Scandinavia, France, Germany, and some of the central countries, they began 100 or 150 years ago what we are hoping to begin in the near future; they have their forests on a permanently productive basis and in general, except as they have had to depart from that practice during the war, they are not cutting beyond the productive capacities in those countries. We have in some regions of the world not yet developed—and we can not tell when they will be developed—large supplies of standing timber, but when those regions are developed the markets of the world, aside from their own markets, will demand that timber; it is utterly useless for the people of the United States to look to foreign sources for any material portion of their timber supply, either now or at any time in the future. We are very thoroughly convinced of that. It is our job, and we have in the United States at least 400,000,000 acres of land, 20 per cent of the area of the United States, that is fit only for the production of timber and it is so situated that we can produce all of the timber that we have any real need for. It is our problem.

Col. GREELEY. It now gives me pleasure to ask the former Chief Forester, Mr. Pinchot, at present forest commissioner of Pennsylvania, to speak to the committee.

STATEMENT OF MR. GIFFORD PINCHOT, OF MILFORD, PA.

Mr. PINCHOT. As Col. Greeley has stated, I was formerly Chief Forester and am now forest commissioner of Pennsylvania. I assume the committee has had all the general information it wants as to the need for the protection of forests and the advancement of the production of forest products in the United States. One or two points have been mentioned that I should like to dwell upon for just a moment. First of all I want to emphasize the fact that the interest of the nontimbered States in this national forest problem is very much greater than that of the timbered States now or at any time in the future, for the reason that the timbered States will naturally take care of their own needs first, whereas the nontimbered States must depend on lumber that comes from elsewhere. Massachusetts, as you have just heard, imports three-fourths of its lumber; New York imports about nine-tenths and Pennsylvania imports four-fifths. The farmers of the country use more than half of the lumber that is produced, and they use it mainly on the nontimbered areas and mainly in the nontimbered States. So it is a safe thing to say that as to agriculture and industry the States that have no supplies of lumber now are more immediately concerned than the States which have.

Mr. RUBEY. They are interested in the protection of the timber and the propagation of the timber in those sections of the country which are timber-producing to a greater extent than they are in attempting to produce it in their own States. Is not that correct?

Mr. PINCHOT. I think that is so now, and it is always going to be so, because, like farm crops, timber crops must be produced on land mainly useful for that purpose. Therefore I think it is perfectly proper for the National Government, remembering that the bulk of agriculture, the bulk of industry, and the bulk of publishing is in the timber-importing States, to take direct action for the protection of the timber where it happens to be.

I think possibly the best thing I could do before the committee, speaking as forest commissioner of Pennsylvania, would be to indicate briefly what the result of this sort of an appropriation will be in our own State. Until last year Pennsylvania was one of the States which refused to accept this assistance, but now there has been a complete reorganization of the department of forestry, and we were not only willing to accept what we received last year, but are very anxious for more.

The situation in Pennsylvania is, briefly, this: We have an area as large as Massachusetts, and probably larger than New Jersey, which is, so far as forest production is concerned, entirely barren; it is not good for anything; it is only good for producing wood, but it is not producing that. The Pittsburgh district alone consumes more lumber than the whole State produces. We could be self-supporting in time if the fires were kept out. The State has been appropriating comparatively small sums for that purpose; this year we are spending \$45,000, but I am proposing to ask the legislature, which is just meeting, for \$1,000,000 for the next two years, \$500,000 a year, to equip the whole State of Pennsylvania so that the forest will be protected against fires. We have got to have roads, trains, telephone

lines, tools, organizations of men in nearby towns, and so on. We are going to need large sums of money to handle the thing because it is a big proposition. Forestry has not gotten anywhere in Pennsylvania because it has been so little understood, but we are now coming to understand it. The freight alone on our imported lumber is not less than \$25,000,000 a year, and probably under the increased freight rates it will reach \$40,000,000. The lumber we are paying for now—and which we might grow at home—runs between \$50,000,000 and \$75,000,000 a year, and that is placing it at the very lowest computation. This forest-fire question is a \$100,000,000 a year question and the State has got to get it under control, because if it does not it is only going to get, in the comparatively near future, the lumber that is necessary for its own industries shipped in at prohibitive prices.

Mr. WASON. Do you mean the destruction amounts to \$100,000,000?

Mr. PINCHOT. No; I mean what we have to pay that we would not have to pay if we were using the timberland of the State wisely. It is an unnecessary expense, and, therefore, in a sense, a fine of at least \$100,000,000 a year.

Of course, you gentlemen understand as well as I do that this lumber question is a question of the American standard of living. We can not cut down on the amount of lumber used per capita in the United States without very seriously reducing our standard of living. We are using not only more than any other civilized nation but twice as much as the average in Europe, and as the level drops so our housing must drop and our standard of living in every sort of direction must drop because wood is still the most universal of all materials. Therefore the forest question is a real question.

Mr. BYRNES. Why is it you have been unable to impress the legislature of the State of Pennsylvania with the importance of the question.

Mr. PINCHOT. We are going to.

Mr. BYRNES. I mean, up to this time to what do you attribute the failure of the legislature of that State and of the other States to appreciate its importance?

Mr. PINCHOT. Because the thing has been viewed as too small. We have been talking about tree planting as though we could plant the whole area, as if there was any chance of planting the millions of acres already devastated and the millions of acres that are producing one-third of what they ought to produce. We have been talking about planting trees along streets and in school yards, giving lessons to school children, and all that kind of thing. It is all good in its way—Arbor Day and all the rest of it—but we have not gotten down to cases and we have not dealt with the economic side of the question. It is one of the biggest economic questions that this country has to deal with because it involves our national safety, as has been said; but far more it involves immediately the standard of living of the American people and their ability to do business. For instance, Pittsburgh would have to shut down if it could not get 500,000,000 feet a year, and it would have to shut down as completely as its supply ran below that figure. All the industries, including agriculture, are dependent on supplies of wood.

We have gotten this last year \$7,500 for fire protection from the United States to be used in Pennsylvania.

Mr. ANDERSON. Is that used in the payment of salaries?

Mr. PINCHOT. That is used entirely in the payment of salaries. We have two fire seasons, one in the spring and one in the fall. Last spring we had 137 men employed as special patrolmen outside of the regular year-around force: 40 of those were paid in full from the Weeks's law allotment, and 57 were paid in part from the Weeks's law allotment. They got all the way from 30 to 45 cents an hour, under the conditions in the State where it was necessary to pay them by the hour, and they got all the way from \$30 to \$120 per month, according to the time they worked. About 2,100,000 acres of forest lands were protected by the patrol; 533 fires were detected and reported, which means almost half of the spring fires. There was a total spent last spring of \$4,020.74 from the Weeks's law allotment. During the fall season there were 123 men employed: 66 men paid in full from the Weeks's law allotment, and 12 men paid in part from the Weeks's law allotment. A total of \$3,471.31 was spent, making a total out of our \$7,500 of \$7,492.05, which is reasonably close: we have not wasted any of it.

Now, we have gotten results out of that, and I want to give you the results from the spring fires and then the results from the fall fires.

Mr. ANDERSON. How long are these seasons in the spring and fall?

Mr. PINCHOT. They last, say, from 10 to 12 weeks in the spring and from 4 to 6 or 8 weeks in the fall.

Mr. ANDERSON. Just why do you have spring and fall seasons and no summer season?

Mr. PINCHOT. When the spring gets along far enough the green stuff springs up in the woods, brush, grass, and so on, and the surface becomes moist enough so that it is very hard for a fire to run. We do actually have fires every month in the year, but it is only at these two intervals that they are of any importance. Now, last spring the fires caught us. The reorganization of the department was only started at the beginning of the fire season and it was impossible to complete it entirely in the face of the enemy, so to speak, and more than that, we had the worst spring fire season that we have had for 12 or 15 years. We have kept a record of fires from 1913, and last year we had 1,286 fires in the spring, and there are only two years of the eight where they had more fires than that. The total number of acres burned over was, roughly, 240,000, a very bad season. Of the State forests—1,100,000 acres, in round numbers—19,000 acres were burned over. Individuals paid, in round numbers, \$12,000 for the expense of fighting fires, and the State paid \$38,000. The damage was \$961,248.35, which is not an accurate figure; that is what we are guessing. I have not, I am sorry to say, the average area per fire, but we had a large number of big fires, and it is probably in the neighborhood of 200 acres per fire. That was a bad fire season.

Mr. WASON. You mean that is the average?

Mr. PINCHOT. That is about the average acreage per fire, and that was not a real good showing.

Mr. ANDERSON. These fires, I take it, occur largely in the mountainous regions and in the less populous districts?

Mr. PINCHOT. Almost entirely. The wood lots of the farms are comparatively safe, and wherever there is any old timber it is comparatively safe because the owners look after it themselves. We have a law in the State under which the chief forest fire warden can compel an owner to keep his forest land in a condition reasonably safe against fire. That law has never been enforced until this reorganization, but it is now being enforced and we are getting results, as well as a great deal of cooperation from the railroads and other big organizations of the State. The fall fire season is much shorter than the spring fire season. We had 290 fires, and in the eight years there were only two seasons in which that number of fires was exceeded. We had the driest October in 28 years; nevertheless the total acreage in the State burned over, including the State forests, was only, in round numbers, 16,000 acres, and there was only one year out of the eight when we had a smaller acreage than that. Out of 1,100,000 acres in the State forests, 125 acres were burned over, and that good showing was made because we had an organization by that time. The cost of extinction in the State was \$4,772.39, and the total damage was \$46,324.95, the smallest, except in two cases, since our records began, and, as a matter of fact, by far the smallest in actual physical damage that was ever incurred. The average acreage per fire, which is the best test of the efficiency of an organization, was 54 acres.

I have read these figures, gentlemen, because I want to impress upon you as strongly as I can that not only is this a subject which is worthy of being looked after but there is the best kind of a reason why the Nation should take its part in fighting forest fires, and any money that is appropriated can be used in such a way as to produce results of great value. I think it is plain that those two things are true, that the thing is worth doing, and that there are existing organizations which are capable of handling the money economically and effectively, and which will get results.

Mr. WASON. In speaking about the supply of wood or lumber, from a consumer's standpoint, what do you think about the probable demand for that in construction in the future as compared with non-combustible material for construction purposes? In other words, will the consumer change to the noncombustible materials for construction purposes?

Mr. PINCHOT. I am very glad you asked that question, because it goes right to the heart of the whole thing. The fact seems to be that the use of substitutes has not diminished the amount of lumber used. For instance, there is more wood used now for freight cars than there was when there were no steel cars; there is more wood used for ships than when all of the ships were wood; and there is more wood used for houses than when there was no concrete.

Mr. WASON. In other words, the competition between noncombustibles and timber keeps relatively in an even proportion?

Mr. PINCHOT. No; there is a constantly increasing use of wood.

Mr. WASON. But the proportion between the two is practically the same?

Mr. PINCHOT. I do not know whether the proportion remains the same, but I do know that the use of wood for the purposes for which

noncombustible materials are employed keeps on growing. You can not put up a building, even where concrete is used, without the use of wood.

Mr. ANDERSON. This is a question which perhaps I should ask Col. Greeley, but what is the basis of the apportionment of these cooperative funds to the States?

Mr. PINCHOT. I do not know; but for my own State my desire is to get as much as I can, and the Forest Service will say how much I can have.

Mr. ANDERSON. If everybody has that point of view, Col. Greeley is going to have a hard time.

Mr. PINCHOT. I think I can say that is what all the State foresters want, as much as they can get.

Mr. BYRNES. The proposal suggested provides that no State shall receive more than the amount which is applied by the State from its funds and the funds of organizations, but there is no statement as to the manner in which it shall be apportioned as between the States.

Mr. PINCHOT. What they did in the State of Pennsylvania was to come into the State and find out how much money we were using for fire protection, then finding out, by inspection on the ground, which is an admirable thing to do, how well that money was being spent, whether the Government money that came into the State was likely to be properly spent. Mr. Peters, representing Col. Greeley, came into the State and made an extensive inspection of the work that was going on, and on the basis of what he found in the woods and upon the basis of the amount of money we were spending our allotment was made, as I understand.

Mr. BYRNES. Then, as I understand it, those States which have many more acres of timber than the other States would ask for a larger amount of money?

Mr. PINCHOT. Yes.

Mr. BYRNES. Because of the necessity they would be under themselves to spend a larger amount?

Mr. PINCHOT. Yes.

Mr. ANDERSON. Col. Greeley, can you answer the question I put to Mr. Pinchot?

Col. GREELEY. In the allotment to any one State we are limited by law to the amount appropriated and expended by that State. It is our policy to use the Federal funds, by and large, where they will do the greatest good, for instance, in States which are just making a start in fire protection. In the States which have large appropriations the question in every case is how much Federal money can be expended efficiently so as to increase the effectiveness of the State's protective system. However, it is not the idea to go in and relieve a State from spending a part of its existing appropriation. Our starting point in every case, as in Pennsylvania, is to find out how and where in that State Federal money can be used to bring additional areas under protection that are not now being protected, so as to make the protection of a particular portion of the State more effective than it is now. It is necessary for us to use considerable latitude in the adjustment of the allotments as between States under that general policy of using money where it will accomplish the greatest good in actual protection.

Mr. ANDERSON. That policy, I suppose, has the effect of increasing the number of States that are interesting themselves in fire prevention, and in increasing the amount of interest which they manifest?

Col. GREELEY. It has resulted in a ninefold increase in State appropriations for firework during the last 10 years.

If there are no other questions, I would like to ask Mr. D. L. Goodwillie, of Chicago, to make a statement.

STATEMENT OF MR. D. L. GOODWILLIE, CHICAGO, ILL., REPRESENTING THE UNION LEAGUE CLUB OF CHICAGO, THE ASSOCIATION OF COMMERCE OF CHICAGO, AND THE NATIONAL ASSOCIATION OF BOX MANUFACTURERS.

Mr. GOODWILLIE. Gentlemen, my statement will be brief. I represent three organizations, the Union League Club of Chicago, probably the largest organization of its kind, a club that is not at all political, devoted entirely to backing up the work of the Federal Government in every unselfish civic work.

I represent the Association of Commerce of Chicago, probably the largest commercial organization outside of the National Chamber of Commerce, and composed of a large number, if not all, of the prominent manufacturers in Chicago and the West.

I represent the National Association of Box Manufacturers, an organization, or rather a trade or business, which takes in about 1,300 concerns through the country.

You can see that I approach this matter from an entirely unselfish viewpoint when I say that I represent the Association of Commerce and the Union League Club of Chicago.

Speaking of the National Association of Box Manufacturers, I think I am safe in saying that this association or this business consumes about 10 or possibly 12 per cent of the lumber used in the United States. The demand for box material is still on the increase and the supply is diminishing.

All these organizations feel that this fire appropriation is necessary at this time. In all fairness to future generations the entire program outlined by Forester Greeley should be carried out in every detail. My State alone, Illinois, has 6,000,000 acres of untillable land which should be reforested.

Mr. ANDERSON. We are very much obliged to you.

STATEMENT OF MR. WEST, OF BOSTON, MASS., REPRESENTING THE BOSTON CHAMBER OF COMMERCE, THE NEW HAMPSHIRE MANUFACTURERS' ASSOCIATION, AND THE MAINE AGRICULTURAL LEAGUE AND CHAMBER OF COMMERCE.

Mr. WEST. I have no statement to make, only to say that the commercial organizations of New England are very strongly behind this movement, particularly the Boston Chamber of Commerce, the New Hampshire Manufacturers' Association, and the newly organized association, the Maine Agricultural League and Chamber of Commerce.

Mr. ANDERSON. We are obliged to you.

STATEMENT OF MR. P. S. RIDSDALE, WASHINGTON, D. C., REPRESENTING THE AMERICAN FORESTRY ASSOCIATION.

Mr. RIDSDALE. My name is P. S. Ridsdale, secretary of the American Forestry Association.

I would say just a word as regards the attitude of the public in this matter. The concern of the public, I think, is much greater than the concern of the owners of the timberland or manufacturers or dealers in forest products. Not until last spring had the public been fully awakened to the necessity of doing something in regard to better protection of the forests from fire. Since they have given the matter consideration, they have gone on record, through every organization, chamber of commerce, federation of women's clubs, and organizations of practically every character, as urgently requesting that some action be taken by both State and National Governments providing better appropriations and better facilities for protection of the forests from fire.

As far as the newspapers represent the public, I wish to say that perhaps there has been no newspaper in the United States which has not in the last year had editorials and figures and articles calling attention to the increased danger from forest fires and what it meant from an economic standpoint, urgently requesting, just as the people themselves have done, action by the Government and by the States in increasing their appropriations.

In brief, I take it that the attitude of the public is practically this: That in the past they have paid for the cost of lack of proper protection of the forests from fires, and they are now urgently requesting the privilege of paying in the future for the cost of proper protection of the forests from fire.

Mr. ANDERSON. We thank you.

STATEMENT OF MR. BEN. A. HAPGOOD, SPRINGFIELD, MASS. REPRESENTING THE SPRINGFIELD CHAMBER OF COMMERCE.

Mr. HAPGOOD. I am associate secretary of the Springfield Chamber of Commerce, Springfield, Mass. I have no word to add to what has already been said, except to say that I am sent here by my chamber of commerce to show its interest in and advocacy of the proposed appropriation.

Col. GREELEY. That completes the list of gentlemen that I have to call upon, Mr. Chairman. There are four gentlemen here who would like to be heard on one of the other items in the bill, at the convenience of the committee.

Mr. ANDERSON. How many gentlemen are there for this afternoon?

Col. GREELEY. There are four gentlemen here this morning who would like to be heard on the forest-products item, and this afternoon there will be, I think, 10 or 12 other gentlemen.

Mr. ANDERSON. If these gentlemen are ready on the forest products, I think we will hear them for a little while right now. With your permission, the committee will first hear Representative John F. Miller, of Washington, on the item that we have just been discussing.

STATEMENT OF HON. JOHN F. MILLER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WASHINGTON.

Mr. MILLER. Mr. Chairman and gentlemen of the committee, I associate myself in this hearing this morning with Senator Wesley L. Jones and Senator Miles Poindexter, United States Senators from the State of Washington. As has been remarked by Mr. Allen, of the Pacific coast organization, by far the bulk of merchantable timber of the United States is on the Pacific coast. To give some idea of the landed interests, the State of Washington is larger than the entire five New England States and two-fifths of the landed area of that State is under the direct control of the United States, either in forest reserves, unsurveyed Government lands, unoccupied national parks, etc. The fire hazard in my State, particularly the Puget Sound country, where, perhaps, the timbered area is as heavily timbered as in any portion of the country, is very great. There are quarter sections of timber lands running from 16,000,000 to 21,000,000 feet of timber to the quarter section. We are interested in this service. Our State makes quite liberal allowances, and is coordinated with the Government work. The private interests, however, are the principal interests, and allied with that is the forestry department of the university of the State, and the patrol system during the fire-hazard season is made up mainly from young men in the forestry section of the State university—trained foresters.

Of late the fire hazard has increased greatly by the increase in the population, the prevalence of automobile parties throughout the State on the great highways that we are building, and the fire hazard is a peculiar hazard, and it is constantly increased. In the national parks, for instance, Mount Rainier National Park, last year visited by practically 70,000 people, camping parties, etc., the fire hazard is great, and it is within the public domain.

We are cooperating with the Government, and we were one of the first to cooperate. Probably our appropriation from the State will be far greater this year than it ever has been.

Mr. BYRNES. How much was it last year?

Mr. MILLER. I think something in the neighborhood of \$40,000. Probably it will be double that amount this year.

The patrolling system, under the coordination system of the State and Government, and the private interests have been very, very effective. It takes fire but a short time to destroy an immense amount of timber in my State.

The fall is the hazardous season. We have no fires in the spring, but in the summer and fall, when the dry season comes on, the fire hazard is great.

I can only ask that this appropriation, if possible, could be increased, and I wish to file with the committee a telegram from the governor of the State of Washington, addressed to Senator Poindexter, which reads as follows:

OLYMPIA, WASH., January 4, 1921.

HON. MILES POINDEXTER,

United States Senator, Washington, D. C.

Wish delegation would urge before subcommittee of House Appropriation Committee, Anderson chairman, at hearing January 7, necessity of appropriation for fire protection and cooperation the States under the Weeks law.

LOUIS F. HART,

Governor of Washington.

Also a telegram from the Washington Forest Fire Association, which is composed of the private interests of the State, which latter telegram is addressed to me, from their headquarters at Seattle, Wash., which reads as follows:

Our organization, representing 75 per. cent of the privately owned timber in the State of Washington, and engaged exclusively in forest-fire protection, works in close, harmonious relations with State and Federal forest-protection work, and if at all possible and consistent with your views would recommend that you see Congressman Anderson, chairman of Agricultural Appropriation Committee, and urge increased appropriations under the Weeks law for fire-protection work. Hearing this subject set for January 7.

Signed by the Washington Forest Fire Association, by O. Bystrom, secretary.

I only want to approve of all the gentlemen have said before me in this hearing and to state that my State is interested greatly in this service.

Mr. ANDERSON. We are very much obliged to you, Congressman.

Col. GREELEY. I see that the State forester of Virginia, Mr. R. C. Jones, is here, and I would like to have him make a statement.

STATEMENT OF MR. R. C. JONES, STATE FORESTER OF THE STATE OF VIRGINIA.

Mr. JONES. I will be very brief. I will only say that I have been associated with this kind of work in Virginia for nearly six years and, as assistant State forester of Maryland, for two and a half years before that, and in the State forestry department of New Hampshire before that for several months.

My work during all that time has been mostly directly connected with this fire-protection work. I have seen what forest protection has accomplished at close hand. I know the details. I know how they do it, and I can testify that they do it well and effectively. It is positively getting results, as far as my experience goes in the States where I have worked.

I want to briefly touch on one point that has not been stressed so very much heretofore, in connection with the responsibility of the private owners in this matter.

Private owners do not start fires themselves. In very exceptional cases, a small percentage of the fires are started by the owners, and to lay the entire responsibility upon them would not be fair. They can not meet it on the cut-over lands; they can not afford to do it. It is the public that starts the fires. People in general—campers, hunters, smokers, and the railroads, miscellaneous small sawmills, and so forth, but it is not the owners. They are only occasionally responsible for any of the fires.

The public has to help out, in other words, and take a share in this work.

Mr. ANDERSON. We are very much obliged to you, sir.

Col. GREELEY. Item No. 71, on page 129 of the estimates, "For investigations of methods of wood utilization," etc. The amount requested this year is \$400,000, representing an increase of \$176,000, approximately, over the present appropriation.

Mr. John Foley, of Philadelphia, representing the Association of Wood Using Industries, is here, and would like to speak to the committee on that item.

Mr. ANDERSON. The committee will hear Mr. Foley.

FOR INVESTIGATIONS OF METHODS OF WOOD UTILIZATION, ETC.

STATEMENT OF MR. JOHN FOLEY, OF PHILADELPHIA, PA., REPRESENTING THE ASSOCIATION OF WOOD USING INDUSTRIES.

Mr. FOLEY. Mr. Chairman and gentlemen of the committee, my name is John Foley, and I am a member of the executive committee of the Association of Wood Using Industries.

This Association of Wood Using Industries is a recently created confederation of various associations that were formed over a period of years to take care of the different wood-using industries. That association appreciates the importance of adequate appropriations for the forest-products laboratory of the Forestry Service in the United States Department of Agriculture, because of the use of wood in the implement, furniture, vehicle, acid, and other industries dependent on the forests.

As you gentlemen are aware, these industries represent probably 20 per cent of the total manufacturing industries of the United States. In these industries there are employed not less than a million people.

The forest-products laboratory has been in existence for 10 years. During that time it has had total appropriations of probably \$2,000,000. This expenditure of Government money has resulted in savings to the country that may be conservatively figured at not less than 10 times that amount per year.

Mr. ANDERSON. What do you have reference to specifically?

Mr. FOLEY. Well, such matters as improvements in wood preservatives, which has enabled less creosote to be used in the treatment of wood, and the use of woods that otherwise would not have been used. Then there have been savings in connection with the uses of wood in other industries besides those connected with wood preservation. There have been changes, as a result of work done by the laboratory, in the structural uses of wood, whereby, owing to the better knowledge of the physics of timber, smaller sizes and new species have been employed, which has extended the use of wood where it otherwise would not have been employed, and in that way cut down the expenditures in connection with its employment.

Mr. WASON. That may be true as far as the manufacturer in the use of wood is concerned, but do you think that has been of any benefit to the consumer—the user of these products?

Mr. FOLEY. Yes; in that information made public in the forest-products publications and the like, as to the more economic use of wood, has been profitable for all consumers of wood. They naturally, through competitive business, have reduced the cost to the consumer because all of them have had a chance to benefit by what the laboratory has done.

Mr. WASON. I understood you to speak about the furniture manufacturer.

Mr. FOLEY. Yes.

Mr. WASON. As one of the items.

Mr. FOLEY. That is one of the associations that enters into this.

Mr. WASON. Well, in that line, do you think the modern use of the raw material in this establishment has improved the standard of the manufactured product?

Mr. FOLEY. I am not quite certain that I understand the question.

Mr. WASON. Well, is the quality of the manufactured product that the consumer buys equal to what it was 30 or 40 years ago? That is a plain question.

Mr. FOLEY. You mean that the present output of the furniture factories is not as good as it was 30 or 40 years ago?

Mr. WASON. Yes, sir. That is, the quality of the material used is not as good as it was 30 or 40 years ago, or even longer, is it?

Mr. FOLEY. Some of it is and some of it is not.

Mr. WASON. What is the proportion?

Mr. FOLEY. I am frank to say that I have no idea.

Mr. WASON. Have you made any investigations?

Mr. FOLEY. No. I happen not to be connected with the furniture industry itself, and do not feel capable of answering the questions of the committee on that particular phase of the subject. Unfortunately, no representative of the furniture industry happens to be here.

Mr. ANDERSON. I assume that the position you are taking is that the possibility of using other wood in making furniture, and the improved methods that had made that possible, have added to the general supply, and the public is benefited by virtue of that fact?

Mr. FOLEY. Yes, sir. Of course, that brings up the question of this general matter of the depletion of timber, and we all feel that the shortage of the forest supply of the country will naturally result in disaster to these industries which have been built up. It will cause them to shift their locations and move about as the timber on which they are dependent happens to be depleted. If they stay where they are, there will be tremendous expenditures for freight to bring their supplies to them; so that the work which the forest-products laboratory does in finding out what different sizes of wood may be used for different things, and what kinds of wood will serve the purposes instead of those which have been in common use, and all work of that character, I am sure is a direct contribution to helping the forest supply of the country to be extended over a greater period.

Forest production takes a great deal of time. Therefore, instead of waiting for a new supply of timber to come on and continuing to use wood just as we have been using it, it is highly essential that better methods of using what we have should be employed, and reduction in the sizes used, if that is possible. Also substitution of the wood that is considered unfit at present, through studies made of its character, to find out what it is fit for—all that will increase the present supply and will make the necessity for waiting for a future supply much less urgent. It is work of that character that this forest-products laboratory has been doing, and we feel that it is capable of doing it much more effectively as time goes on. The various lines of work you gentlemen are doubtless familiar with from statements to you by Col. Greeley and his associates.

Mr. ANDERSON. I think it might be interesting for the committee to know what particular lines of work conducted at the forest products laboratory you consider especially useful.

Mr. FOLEY. Well, we consider the work which they are doing in kiln drying as of special importance. Work which they have undertaken to a slight extent in the standardization of dimensions and sizes of material; the work which they have done in the study of wood preservation; the work which they have done in connection

with finding out the losses due to decay, mold, etc., in paper pulp and pulp wood; the work which they have done in determining how to get acetic acid and alcohol out of wood.

Mr. ANDERSON. Do you think that that particular work has any relation to present conditions?

Mr. FOLEY. Yes, sir; because it all represents an opportunity to avoid some of the wastes that are now going on. If we can curtail the amount of waste that occurs out of the woods, as well as in the woods, of course, we will extend the available supply that much longer, and give everybody an opportunity to have a greater length of time to prepare for the future. Of course, the kind of work that is involved in this study is extremely technical research and an organization like the forest-products laboratory, built up of specialists along those lines, without any direct interest in the work that they are doing aside from their endeavor to provide information that will be useful to the industries, is very much more desirable than a lot of dissociated efforts along that line undertaken by the individual industries that are interested. Of course, those industries in the past have individually, as associations, or as individual concerns, done work along these lines, but their efforts have been kept to themselves, and individual operators alone have profited by the development of knowledge along those lines.

Mr. ANDERSON. Your association does not maintain any general research laboratory?

Mr. FOLEY. No, sir; but we would provide funds to cooperate with the forest-products laboratory and be very glad to have them conduct the research on account of their disinterested position. It is very much appreciated that in an industry such as I am representing here, there are a great many craft jealousies, and an individual factory, for example, will think it has some special way of doing something that nobody else should know about, or be able to duplicate. Now, if we find out that something can be done by making it available to everybody, as it would be if the forest-products laboratory or any other Government agency did it, the industry as a whole would profit. In figuring what the associations themselves would have to spend, or what this laboratory might do in conducting investigations along lines of conserving material after it comes from the woods, we feel that an appropriation of not less than \$500,000 would be entirely justified.

Mr. ANDERSON. If there are no questions, we are very much obliged to you, Mr. Foley.

WEDNESDAY, JANUARY 5, 1921.

STATEMENT OF MR. B. H. RAWL, ASSISTANT CHIEF, BUREAU OF ANIMAL INDUSTRY.

EXPERIMENTS AND DEMONSTRATIONS IN LIVE STOCK PRODUCTION IN CANE SUGAR AND COTTON DISTRICTS.

IBERIA FARM, LOUISIANA—ERECTION OF BUILDINGS—CONSTRUCTION OF ROADS.

Mr. RAWL. There are two additions to the language in the first item. One is to restore the language formerly carried in it, authorizing the erection of buildings, and the other authorizes the build- —

ing of a road. The amount carried for this item prior to this year has been \$60,000. The estimates submitted provide for \$67,500, with the proviso that \$7,500 be made available to build a road into the station. The remainder of it is needed for additional equipment or additional buildings, two additional stock sheds, six Negro houses, another cottage for employees, and a gravel road.

NUMBER OF EMPLOYEES.

Mr. ANDERSON. How many people are regularly employed at this station?

Mr. RAWL. Laborers and all?

Mr. ANDERSON. Yes.

Mr. RAWL. About 25, but it varies very much, according to the season. There are 1,000 acres in the place, and from 350 to 400 under cultivation, the balance being in pasture. I should say 400 acres, roughly, are in cultivation.

VALUE OF BUILDINGS.

Mr. ANDERSON. Can you give any estimate as to how much is invested in the buildings?

Mr. RAWL. The value of buildings to date aggregates \$40,944.77. I might say that during the past year the return from this property to the Treasury was \$14,393.51, which is \$8,000 or \$10,000 less than it was the year before on account of reduced activities. We have had to reduce activities on account of the greatly increased cost of things, and therefore we have not sold as much.

NUMBER OF ANIMALS.

Mr. ANDERSON. How many animals have you there now?

Mr. RAWL. On July 1, 1920, we had in the dairy herd 44 head; in the beef herd, 130 head; in the hog herd, 121 head; and the horses, mules, and mares aggregate 30 head. Of course the number varies considerably during the season. We always have to buy some steers, and then the hogs and cattle are sold according to the season. It is necessary to house the supervising force. At the present time there are six 3-room cottages for negroes. It was thought at the beginning that perhaps it would not be necessary to house them on the place, but in order to stabilize labor and have it at a time when there is a great demand for labor in the vicinity it is becoming more and more necessary to furnish additional houses, and that is why six additional cottages are provided for in the estimates. The supervising force has to be on the place to look after the work, and then, as a matter of fact, there is no other place to live.

Mr. BYRNES. How far is it from the nearest town?

Mr. RAWL. It is about 4 miles from Jeanerette and about 8 miles from New Iberia.

ROADWAY.

Mr. BYRNES. What have you to say about the road proposition?

Mr. RAWL. This tract of land fronts on a watercourse, and the highway is about 150 to 200 yards from the watercourse; that is, the

highway is that far distant from the farm. The county provided a bridge across the stream and a small tract of land between the stream and the county road, through which tract the entrance to the farm passes. The buildings are assembled in one group near the center of the property. There is another road that is little used and is not improved that passes through the farm and crosses the entrance to the property, above referred to, which it is desired to improve. This entrance road into the farm connects the buildings with both public highways and is something like a mile distant. We have the road nicely fixed up now, but when a rain comes it gets slick and is almost impassable.

Mr. BYRNES. The road about which you are now talking is on your property?

Mr. RAWL. Yes.

Mr. BYRNES. And that is the road for which you want this appropriation?

Mr. RAWL. Yes.

Mr. ANDERSON. Is it a public road?

Mr. RAWL. Well, it is a public road in the sense that it is on public property.

Mr. BYRNES. It is on the property of the experimental farm, is it not?

Mr. RAWL. Yes.

Mr. BYRNES. Is it a county highway?

Mr. RAWL. Oh, no; it just connects the interior buildings and grounds to the two highways.

Mr. BYRNES. How long is the road?

Mr. RAWL. Roughly it is a mile long.

COST OF ROAD.

Mr. BYRNES. You are not going to spend \$7,000 for a mile of road, are you?

Mr. RAWL. Well, there is no way of fixing that road other than by the use of gravel, that we know of. There is no material around there with which to fix it.

Mr. RUBEY. Can you get gravel from that stream?

Mr. RAWL. No; the stream has a mud bottom, and the only way to get gravel is to ship it there, which is the custom in improving the county roads.

Mr. BYRNES. Is the county highway a gravel road?

Mr. RAWL. It is a gravel road.

Mr. BYRNES. You do not have sand-clay roads there?

Mr. RAWL. No; not to any extent; they use gravel instead and it has to be shipped in. I think it is probably the wiser policy, but the necessity of shipping in the gravel makes it rather expensive.

Mr. MAGEE. What do you mean by a gravel road? Is it what is ordinarily called a macadam road?

Mr. RAWL. No; it is simply a road made of gravel.

Mr. MAGEE. It keeps the water out of the center of the road, and that is the main thing, is it not?

Mr. RAWL. Yes; the way they apply it there; they simply put on 4 or 5 inches of gravel for the purpose of covering the crown of the road.

Mr. MAGEE. And let the travel wear it down?

Mr. RAWL. They roll it at first, then keep it smooth and let the travel wear it down; it makes a very good road and the roads in that region are made in that way. This is, of course, of considerable importance to the business of the farm because there is constant travel. It is also very important to the public generally. This road as at present constructed is made of black dirt which become treacherous when a little rain falls on it.

Mr. BYRNES. Does it become as skiddy as clay?

Mr. RAWL. Yes; it becomes slick as can be, so slick that it is dangerous.

Mr. BYRNES. Would it be as dangerous as Saluda red clay?

Mr. RAWL. It is about as slick as anything possibly could be: I think it is about as slick as a red-clay road. Of the buildings two would be sheds for live stock. There is so much rain in that section that considerable loss is involved, and we feel it is desirable to provide more shed room for the care of this stock through the winter. When that is done, if the facilities permit, we would like to extend our force; we have never been able to have as complete an organization as we would like to have there, and there are a number of problems on crop production that it is highly desirable to work on from the live-stock standpoint; that has never been done.

Mr. MAGEE. Is the farm located in one of the cotton-growing States?

Mr. RAWL. It is in the coastal plains section of Louisiana, and this is a cotton and sugar-cane district.

Mr. BYRNES. You now grow more sugar cane than cotton, do you not?

Mr. RAWL. Since the boll weevil has been so disastrous for many years it has driven cotton out to a great extent. It is in the sugar-cane belt, although it is not in the heart of it.

CHARACTER OF EXPERIMENTS.

Mr. ANDERSON. What is the character of the experiments being carried on with these herds?

Mr. RAWL. With the beef cattle there are two general problems. One is to determine the feasibility of breeding beef cattle using these lands as pastures.

Mr. ANDERSON. Breeding is in no sense different there than it is anywhere else, is it?

Mr. RAWL. I was not alluding to the breeding primarily, but to the economic possibility of using these lands to produce feeders, determining the carrying capacity of the land itself and improving that carrying capacity as much as possible.

Mr. ANDERSON. That is a question of the amount of crops you can grow, is it not?

Mr. RAWL. It is a question of the amount of crops you can grow and how much supplementing is necessary to winter the animals. These lands appear to have a rental value for pasturage of about \$7 an acre for raising feeders, we will say. The other general experiment in connection with beef cattle is the utilization of such products as are there, including sugar-cane by-products, for finishing cattle. The feeding experiment involves the utilization of all

sorts of silage, including the cane tops, which have always been a waste product there. It is felt that if the cane could be used as silage it would be advantageous at periods of low prices. This silage experiment or feeding experiment includes also various other silages that have been produced on the place, including some of the newer products, such as Japanese cane, which is not commonly used as silage, but is a tremendous yielder. That, along with sorghum of different varieties, and some other new plants that have been tried there, are used in the feeding experiments, to determine the feasibility of finishing out the cattle that can be grown in that country. There is a lot of waste land in that country which can and will be used for cattle production, because when the ticks are entirely out of the way there are large areas of land that can be used to carry as much cattle as possible. If it is feasible to carry those cattle by using products that are available locally, it will stimulate and aid the cattle industry. On the other hand, if it is found feasible to use these waste lands with a certain amount of cultivated lands—on which we are working at the present time—it will serve as a foundation for the cattle industry in that region, and we believe the problems on which we are working now are fundamental to that industry.

ALTITUDE AND CLIMATE.

Mr. RUBEX. What is the altitude of this place?

Mr. RAWL. It is very near sea level; I would say within 20 or 25 feet.

Mr. RUBEX. What is the mean temperature in the summer months?

Mr. RAWL. It is about the same as it is along the whole coastal plains country; it will not exceed possibly 100 in very exceptional weather; but it is seldom higher than 90, we will say.

Mr. RUBEX. Is such hot weather suitable for cattle?

Mr. RAWL. I would not say it is altogether suitable for them.

Mr. RUBEX. On the contrary, is it not very hard on the cattle during that hot season?

Mr. RAWL. It is hard on cattle, but it is not as hot there as one would imagine. The heat, I should say, is very much the same as it is along the whole Gulf and Atlantic seaboard, and while there are hot spells they are offset by the Gulf breezes, which make the usual temperature during the summer not seriously severe. I do not regard the temperature as a very serious handicap to livestock production; a more serious handicap is the mosquito.

BREED OF CATTLE.

Mr. ANDERSON. What breed of cattle are you using?

Mr. RAWL. Of beef cattle we are using some natives and some high-grade Herefords as a basis for breeding work, and we are also breeding a few of both of these to a Brahmin bull. You have heard of these Brahmin cattle as an insect-resisting cattle. They have been introduced in Texas and have attracted considerable favor in the coastal regions, particularly where there are insect pests. We have raised a few of these Brahmin grades and they have been quite successful; they grow well; they are not the beef type which are ordi-

narily desired here, but enough have been produced in south Texas so that packers are buying them at a slight premium, and they seem to grow better than anything else we have had at the farm so far, although we have not raised a great many of them yet. The horse and mule work is primarily the problem of using mares for farm work and breeding them as much as possible, in order to determine the feasibility of it, something that that country has not done. The work done by mares is kept track of from day to day, the exact amount of work they do, the feed they consume, and the feed the colts consume; all these data are tabulated and show the exact cost of keeping mares for working purposes and the sacrifice which will result by so doing, and also the cost of producing mules under that condition. We have some 15 or more mules that are at work on the farm, having been raised there, and some of them are splendid; in fact, most of them are very high-class mules. The hog work is very much the same as the beef cattle work.

Mr. RUBEY. You have 1,000 acres on that farm, 400 in cultivation. What do you do with the other 600 acres?

Mr. RAWL. They are in pasture. I might say that the most valuable work done there so far has related to the utilization of this land for pasture.

Mr. RUBEY. Practically all of the 600 acres make good pasture?

Mr. RAWL. Yes, sir; and practically all of it is land that has been in cultivation; a small amount is too wet for cultivation, but most of it has been cultivated. As I say, I think the pasture feature of that work has been among the most valuable work done there.

Mr. RUBEY. How is it watered?

Mr. RAWL. The stock is watered from a well.

Mr. RUBEY. You have no streams running through there?

Mr. RAWL. The Bayou Teche borders on the front and the cattle do drink from it; on the back side there is another stream and there are certain ditches that pass through the property, but the water is pretty bad and is sometimes unreliable. We have a good well from which we can convey water to the various pastures and the cattle are watered in that way.

EXPERIMENTS IN DAIRYING AND LIVE-STOCK PRODUCTION IN SEMIARID AND IRRIGATED DISTRICTS.

WOODWARD, OKLA., STATION.

Mr. ANDERSON. We will next take up item No. 6 on page 294.

Mr. RAWL. That relates to live-stock work on the farms that have been maintained in the dry land and irrigated districts. That item is not increased as seems apparent. The apparent increase is due to the inclusion of a separate item of \$10,000 that was carried in last year's bill, providing for live-stock investigations at the field station at Woodward, Okla.

Mr. HARRISON. The item is No. 18, on page 306.

Mr. RAWL. I might say that that item was not carried in the estimates of last year, but was put in by Congress. It has not been used, because there are no buildings with which to begin this live-stock work at Woodward, Okla., and there was no provision made for buildings.

Mr. ANDERSON. Is the land at Woodward owned by the Government?

Mr. RAWL. It is one of the Bureau of Plant Industry's semiarid stations.

Mr. ANDERSON. It is a plant industry station?

Mr. RAWL. Yes, sir. As to the ownership of the land, I am not informed.

Mr. HARRISON. I think the department owns the land.

Mr. RAWL. The remainder of this item is the same as it has been heretofore, except that the language is changed to include authority for the erection of the buildings which would be necessary for the extension of this work at Woodward and elsewhere.

Mr. ANDERSON. Will the \$10,000 carried in item 18 go back into the Treasury this year?

Mr. RAWL. Yes, sir; it will not be used so far as I am aware.

Mr. ANDERSON. If \$10,000 was not enough to start this thing during the current year, how is it going to be enough to start it next year?

Mr. HARRISON. There is no authority for buildings.

Mr. RAWL. And the station had no facilities for live-stock work at all. While the buildings required would not be elaborate, at the same time there is nothing there and there is no way to use this money for experimental work without equipment, and, therefore, it can not be used.

Mr. BYRNES. If this \$10,000 is granted you propose to erect buildings at Woodward, Okla.?

Mr. RAWL. It is proposed to carry out the provision which was carried in the bill last year and which, as I say, will require some building, but not \$10,000 worth.

Mr. BYRNES. Do you think it is advisable to establish another station there?

Mr. RAWL. Well, the department has regarded it as a desirable thing to do.

Mr. BYRNES. Why?

Mr. RAWL. Well, in line with this main item. This main item, which formerly has been \$40,000, has been applied to conducting live-stock investigations on these various dry-land farms in the Great Plains area, extending down through the western Dakotas, Texas, a part of Oklahoma, and western Kansas. These Oklahoma people wanted some of this work done at Woodward, but the department did not have the funds and did not include it in the estimates, so they made an appeal to Congress, and Congress provided \$10,000 to do at Woodward what was planned to be done at several other places. This item carries \$50,000 instead of \$40,000, as formerly; there is no increase in the item itself, but it is simply a combination of the two, with authority given to erect buildings.

Mr. ANDERSON. At how many different stations is this animal-industry work carried on?

Mr. RAWL. It is carried on at Huntley, Mont., Ardmore, S. Dak. and some work is being done at Newell, S. Dak., and Bellefourche S. Dak.

Mr. MAGEE. There is nothing in the present item which requires you to make any expenditure at Woodward, Okla.?

Mr. RAWL. Nothing in this particular item?

Mr. MAGEE. Yes.

Mr. RAWL. No, sir; it has not heretofore been specified in the act where these expenditures were to be made.

Mr. MAGEE. That was specifically provided for, but it has not been carried out, and there is nothing in the language of item 6 which would require the department to carry out that provision.

Mr. RAWL. No; the provision was not carried out, but it was made known to Congress before this bill was passed that that work could not be done, as I recall it, without authority to put up certain buildings and add a certain amount of equipment.

AUTHORITY FOR ERECTION OF BUILDING AT WOODWARD, OKLA.

Mr. MAGEE. You talk about erecting buildings at Woodward, Okla., but there is nothing in the provision which would require that.

Mr. RAWL. Only the general authority to erect the buildings necessary.

Mr. HARRISON. It is our intention to do that and we have no objection whatever to your stating that that \$10,000 should be used at Woodward; but there is no more reason for stating that this sum is to be used at Woodward than there is for making a similar statement in connection with any of the other stations.

Mr. MAGEE. But there is the point: Congress has shown its intention to be that this money should be spent at Woodward.

Mr. HARRISON. Yes, sir.

Mr. RAWL. We would have expended that money there if it had been feasible.

Mr. MAGEE. But it has not been expended there.

Mr. RAWL. It has not been expended anywhere.

Mr. MAGEE. And if you intend to spend it there, I should think it would be a good plan to say so. You have not any power to bind the next administration of the Department of Agriculture.

Mr. RAWL. No, sir; but I think the department never would go contrary—my experience, regardless of changes of administration, is that there has never been any violation of what is the understanding regarding these appropriations, so far as I know; and I feel that it is not necessary to specify Woodward and it is not necessary to specify any of the other stations in which this work is done. But if Congress wishes to, if you gentlemen feel that it is desirable to make that specific, I see no objection whatever.

Mr. MAGEE. I am not saying anything about that. I am not particularly or especially concerned in it; I only call attention to the point.

Mr. RAWL. I can assure you if this \$10,000 is put in here, the \$10,000 will be used at Woodward.

Mr. MAGEE. The point I raise is you can not speak for others.

Mr. RAWL. No, sir; I can not; surely I can not, but my 16 years' experience in the department makes me feel there is no doubt that it will be done; because the record behind it would show plainly Congress intended that should be done.

Mr. MAGEE. My experience in Congress is that nothing counts. You can not count upon anything unless provision is made therefor. I may be in error in that. I do not know whether you want to

spend \$10,000 at Woodward or whether you do not; but there is nothing in this provision requiring anybody to spend a cent there.

Mr. RAWL. That is true, but it is perfectly agreeable to us to have it in there if you think it desirable.

Mr. MAGEE. You mentioned the transfer of the item. Of course, to my mind, that is a loose way of doing business. Perhaps I look at the proposition along legal lines, but it looks to me like a loose way of doing business. If you still intend to spend \$10,000 in the erection of buildings at Woodward, Oklahoma, it looks to me the only way to do is to ask for a specific appropriation for that specific purpose.

Mr. RAWL. We do not expect to spend \$10,000 for buildings. The idea was to spend \$10,000 for the whole work, including whatever buildings are necessary to carry on the live-stock work.

Mr. MAGEE. Of course, this is a question that is likely to be raised when the bill comes in the House by the Representatives from Oklahoma.

Mr. RAWL. Representatives of the Woodward section have asked the department why it was not using this money; they had gotten the appropriation made and they have asked us why it was not spent.

Mr. MAGEE. They have asked this committee why the money was not spent there.

Mr. ANDERSON. Supposing this money is provided with authority to put up these buildings: what work will be carried on there which is different from that carried on elsewhere?

Mr. RAWL. It will not be materially different; it will simply be a duplication of similar work being done in other regions, with such differences as the feed, the grazing capacity of the ground, etc., that exist only locally make necessary. Of course, there is a decided difference in the Great Plains area, between South Dakota and Oklahoma, for instance.

Mr. BYRNES. I understand you take this position, that you did not ask for it last year, but inasmuch as Congress by its action directed that it be done, you are now asking for it.

Mr. RAWL. Yes, sir. And the department has regarded this as wholly in line with the similar work it is doing in this general territory. Congress wanted some of it done at Woodward: this was perfectly agreeable to the department.

Mr. BYRNES. You thought it ought to be done at some place, and as long as Congress indicated this particular place you were satisfied?

Mr. RAWL. Exactly. We were expecting to extend the work under the \$40,000 item anyway, but not to Woodward. This whole work relates to live-stock and dairy experimental work in these dry-land regions, where dry-land agriculture has been in process of development and where the farmers have been up against many serious problems.

Mr. MAGEE. I assume, then, from your statement you do not think there is any pressing necessity for the expenditure of this amount of money at Woodward?

Mr. RAWL. I think it is vital work.

Mr. MAGEE. I am not talking about the work: I am talking about doing it at this particular place—Woodward.

Mr. RAWL. I say Woodward had not been selected as one of the points at which it was to be done; but I do not say Woodward would not serve the purpose; I am not prepared to say Woodward would not serve the purpose; I am not prepared to say Woodward would not serve the purpose. It is perfectly natural in this dry country where agriculture is frequently facing many uncertainties, that many communities wish the work to help point the way to stabilize it. Woodward wanted it and naturally other points want it, too. I, myself, am not familiar with the details of the situation at Woodward, but their Representatives felt that the agricultural situation was in a very critical shape there, and that is the reason they made this request. But this condition relates, broadly, to the Great Plains area, and we are trying to work out the live-stock production problems that are fundamental to that whole area.

Mr. ANDERSON. Is the State of Oklahoma conducting any station or doing any work along this line?

Mr. RAWL. Not that I am aware of, although I am not positive, sir.

Mr. WASON. The experiment station is doing similar work to that in Oklahoma, is it not?

Mr. RAWL. The experiment station in Oklahoma is doubtless doing live-stock research work at the station.

Mr. WASON. But is not every land-grant college, that has an experiment station, engaged in that work and have been engaged in it for years?

Mr. RAWL. Many of them in an extensive way and a great many of them in a very small way. Of course live-stock investigation is expensive and it is slow, and I feel that the Government's interest in dealing with this great region of the country is this, that while it has not been responsible for locating thousands and thousands of people there who have suffered a great deal, yet since they are there it is trying to help them build an agriculture that is safe and reasonably dependable. An unquestionably essential feature of such an agriculture is live-stock production. This has always been a live-stock country since the time it was first occupied by white people, as a matter of fact; but formerly it was a range country where as many cattle were kept as could take care of themselves. Now, with the cutting up of this country and the disappearance of much of the range, the necessity for combining farming with the utilization of this dry-land country involves a new system of agriculture. Formerly they used the ranges inefficiently and they could not afford to do otherwise.

Now, it means the utilization of a given amount of range land to its maximum efficiency, and this in conjunction with adjacent farming that will supplement that range. For example, during unusual good seasons they never can stock the ranges to their maximum capacity, because a bad season is liable to follow and the cattle will all starve. Now, if they can preserve in pit silos, for example, their surplus forage of the good seasons to supplement the bad seasons or winter seasons they can increase the carrying capacity of the ranges. So it is a problem now of combining the utilization of these range lands in a large way with farming.

Mr. WASON. To put it in a sentence, it is to get the people to understand general farming in connection with range grazing.

Mr. RAWL. Yes, sir; and to combine the two.

Mr. WASON. I say to engage in general farming instead of having immense areas over which the cattle run wild.

Mr. RAWL. That brings up the problem, an essential problem in that country, of providing first the home supplies.

Mr. MAGEE. To take care of what?

Mr. RAWL. The home supplies for the people; the supplies of meat, milk and dairy products, grain, and vegetables, and that sort of thing. Milk cows, for example, are often not kept in that region and pork is often scarce. It will likely never be a great pork-producing country, because they can not produce the necessary feed; but if we can help to point the way for every farm to raise its home supply of pork and its home supply of milk and milk products, then commercial milk production and hog production will take care of itself. But the carrying of cattle and sheep on those grazing lands in unquestionably the logical development for commercial agriculture. Our work here in this whole matter is to take up such problems as relate to the handling of live stock.

Mr. WASON. And to conduct that investigation you need these stations with shed space to store the forage and such stuff and to harvest it at proper times and cure it under proper conditions and show them how to feed.

Mr. RAWL. Yes. We are not establishing new stations; we are simply putting in live-stock work at the stations the Bureau of Plant Industry established a number of years ago, which are devoted primarily to crop-production methods. This is merely an extension of live-stock work at the stations already established. It is not contemplated at any time to establish new stations, but only to add this work and to provide certain equipment at certain points at stations already established.

Mr. WASON. Has your department gotten out any bulletin for general distribution to the farmers out in that plains territory, particularly in Oklahoma, of advice and instructions to them along general lines?

Mr. RAWL. A good many bulletins have been issued to them on the various problems of dry-land farming.

Mr. WASON. Yes; but I am asking you if you have sent out a bulletin for distribution or have one you can distribute and send out to a farmer at Ardmore that he can read at his leisure and see what the department advises as good husbandry there?

Mr. RAWL. Yes, sir. But we have issued no bulletins as a result of this particular work in these regions as yet.

Mr. WASON. Would you be kind enough to mail me one of those bulletins you have issued?

Mr. RAWL. Yes, sir; but they will be rather general in character.

Mr. WASON. I think so.

Mr. RAWL. They will not relate specifically to the investigations we are speaking of, because the work done thus far has not been published in detailed reports.

Mr. WASON. How many years have you been following that line of activity?

Mr. RAWL. We have been working on it three years.

Mr. WASON. And you have not got a specific bulletin that is practical to send to any of those farmers out there to give them general or comprehensive advice?

Mr. RAWL. No, sir. Certain statements are sent out regarding each piece of work at each station. A certain amount of publicity is given through the local press from time to time as this work progresses. But the publication of a summary of results—for instance, the grazing experiments; that is one of the problems in beef-cattle work at Ardmore and dairy work at Huntley—it is hardly desirable and hardly safe to publish results that do not cover a period sufficiently long to assure their correctness. It is dangerous. Sometimes it does more harm than good. And while we keep a locality posted as much as possible while the work is in progress, so that they may follow it along, at the same time the department feels that the drawing of conclusions and putting out a bulletin had better be done conservatively.

WEDNESDAY, JUNE 5, 1920.

**STATEMENT OF MR. FLOYD R. HARRISON, ASSISTANT TO THE
SECRETARY, DEPARTMENT OF AGRICULTURE.**

Mr. HARRISON. The only items that remain to be discussed appear under the miscellaneous section of the estimates. We have discussed the first eight items and, if you wish me to do so, I will run through the others hurriedly. I do not think that any of them will require detailed explanation.

PURCHASE, REPAIR, MAINTENANCE, ETC., OF VEHICLES.

The first is on page 296, item No. 8. This item, as you know, does not carry an appropriation. It simply authorizes the use of a certain part of the lump-sum appropriations available to the department for the purchase, maintenance, and repair of motor-propelled and horse-drawn passenger-carrying vehicles. It was made necessary by a general act passed by Congress in 1914, I believe, which requires specific authority before any expenditures can be incurred for this purpose. Last year we had \$60,000 for maintenance, repair, and operation and \$15,000 for purchases. For this year we asked \$75,000 for maintenance and \$20,000 for purchase, but Congress eliminated the authority for purchase and reduced the item for maintenance to \$60,000. We are asking for next year a total of \$125,000, of which \$25,000 is to be used for the purchase of motor-propelled passenger-carrying vehicles and \$100,000 for the maintenance of those to be purchased and those which we already own. The detailed expenditures are indicated in the table which appears at the beginning of page 298. The vehicles we now own are listed there, together with an estimate of the amount that will be needed in each case for maintenance.

Mr. MAGEE. Did you not get a lot of automobiles from the War Department?

Mr. HARRISON. We secured some for use in connection with our road work.

Mr. ANDERSON. Am I correct in the impression I have that under that law it is not possible for you to secure trucks and passenger cars?

Mr. HARRISON. Not for general departmental use.

Mr. ANDERSON. I mean for departmental use.

Mr. HARRISON. You are correct. In a few cases the Bureau of Public Roads has loaned trucks to some of the other bureaus of the department from the 10 per cent which they are authorized to retain out of the distribution to the States. The Bureau of Public Roads retains title to these trucks and they will be returned to it as soon as they are required for road purposes. It is merely a temporary arrangement to provide for the use of a few trucks until they are actually needed in connection with the road work.

Mr. ANDERSON. There is no authority for the Bureau of Public Roads to turn over to you trucks for the use of the department?

Mr. HARRISON. No, sir. The distribution is confined to road work. But the solicitor has held that, where the Bureau of Public Roads has trucks available which will not actually be needed for road work, say for a month or for the next few months, they could be loaned temporarily to some other branch of the department, thus keeping them in use and also keeping them from deteriorating during the interval between their transfer to this department and their use on road projects.

Mr. BYRNES. As to passenger-carrying automobiles, have you had any funds with which to purchase such machines this year?

Mr. HARRISON. No, sir; we have not.

Mr. BYRNES. You want authority to purchase?

Mr. HARRISON. Authority to spend not to exceed \$25,000 out of the appropriations available to the department. This is merely an authorization; it carries no appropriation itself. The machines we propose to purchase are listed on page 300, with the purposes for which they are to be used and the employees of the department who are to use them.

Mr. Anderson, do you happen to know whether there are any trucks the War Department or the Bureau of Public Roads has that might be made available for the use of the department for official business?

Mr. HARRISON. I can not speak for the War Department; I do not know whether they have any or not. The Bureau of Public Roads has reserved no more machines than they will require within a reasonable time for the road work for which they are responsible, namely, that which is done in the national forests. As you know, we construct the roads in the forests ourselves. We have attempted to make temporary use of some of the machines pending the time when they will be actually needed in connection with the road work.

Mr. BYRNES. The officials for whom machines will be purchased under that language, and whose names and occupations are set forth in this table—what are they now doing for transportation?

Mr. HARRISON. They are hiring machines, Mr. Byrnes, whenever it is necessary for them to use them. By the way, I would like to call your attention to the fact that this provision relates solely to the field service of the department—that is, the service outside of the District of Columbia.

Mr. BYRNES. It relates only to the field service?

Mr. HARRISON. Yes: the provision is specifically limited to the field service.

Mr. BYRNES. Where they are now renting them, do they have to pay very high rentals?

Mr. HARRISON. You know, as a general rule, what you have to pay for the hire of a machine. It ranges all the way from \$1 to \$5 an hour, depending, of course, upon the kind of machine you get. And most of these men are working in remote districts where it is frequently necessary for them to make special arrangements for transportation. You will see that all the employees who are to use these machines are field employees—employees engaged in field work.

Mr. RUBEY. Does anybody know whether the War Department has a surplus of automobiles?

Mr. HARRISON. I could not say. I think I can ascertain that for you through the Bureau of Public Roads. In connection with the distribution of material and equipment, the bureau has kept in pretty close touch with the surplus supplies of the War Department. We have had difficulty in getting some articles, because naturally the War Department wishes to retain not only a sufficient quantity to meet its immediate needs, but also a reserve for possible future use.

Mr. RUBEY. There has been a great deal of rumor going around that they had a great many automobiles. I do not know whether they have or not, but if they have those automobiles and they are stored away and are deteriorating they ought to be got hold of and made use of.

Mr. HARRISON. In round numbers, they have turned over to us for distribution to the States something like 20,000 trucks.

Mr. RUBEY. I am talking about automobiles—passenger-carrying machines. I am not talking about trucks.

Mr. HARRISON. I do not know. I will be glad to ascertain and give you that information.

Mr. BYRNES. You are asking for an increased appropriation for maintenance?

Mr. HARRISON. Yes.

Mr. BYRNES. Your statement being that it costs much more now to replace broken parts.

Mr. HARRISON. Yes. And then we are asking for the privilege of expending \$25,000 for the purchase of new machines. These, of course, will have to be maintained. The estimate of \$100,000 includes the amount that will be expended for the maintenance of the new machines as well as of the old. Of course, the older a machine is the more extensive are the repairs. Many of our machines are now in such a condition that they will have to be completely overhauled if we are to be able to use them during the next fiscal year. And any automobile owner knows the cost of maintenance and repairs has increased considerably.

USE OF TAXICABS LIMITED.

Mr. BYRNES. These agents, for instance, of the market service for whom it is expected to purchase machines, when they now travel out to the freight station, for instance, where the refrigerator cars are parked, do they use a taxi?

Mr. HARRISON. They do not use a taxi unless it is a case of absolute necessity. Under the rulings of the comptroller it is exceedingly difficult to get by with any taxicab fare in a city.

Mr. BYRNES. You would not expect them to get by with a taxi in the country?

Mr. HARRISON. When I say "taxi" I mean an automobile. Even in the country the employee must certify that no other means of transportation was readily available.

Mr. BYRNES. To whom is that statement submitted?

Mr. HARRISON. It is submitted in the reimbursement accounts. It is passed upon first by the bureau auditor, then by the chief of the bureau, then by Mr. Zappone, and then by the Auditor for the State and Other Departments. In some cases the account is submitted to the Secretary for consideration and approval.

Mr. BYRNES. So it is well checked.

Mr. HARRISON. It is well checked. The use of the taxicab in the department is exceedingly limited. I think Mr. Zappone will verify that statement; and it has caused a great deal of criticism on the part of the employees generally. I think the comptroller recently held that a man traveling on official business, who had two or three bags with him and who took a taxicab to the station because it was raining hard, was not entitled to reimbursement for the taxi fare. The comptroller disallowed the item because street cars were available, and held he should have taken a street car. Is not that correct?

Mr. ZAPPONE. That is correct.

Mr. HARRISON. It seems to me that is going pretty far.

Mr. BYRNES. There is always a criticism in Congress of the use of taxicabs by department chiefs and department employees, and I am anxious to know what criticism there is by your employees of their not being allowed to use them.

Mr. HARRISON. It has caused much criticism and discouragement. When a man has several bags and has to get on a street car, whether it is raining, snowing, or what not, to go to the station it is going pretty far. Under certain conditions he is able to use a hotel bus, when there is one available; but frequently there is no bus in operation.

Mr. BYRNES. Then you can not get by with a taxicab?

Mr. HARRISON. Except under the most pressing circumstances.

Mr. BYRNES. What do they call pressing circumstances?

Mr. HARRISON. Where there are no other means of transportation readily available.

NUMBER OF AUTOMOBILES.

Mr. RUBEY. How many automobiles have you in the department?

Mr. HARRISON. Aside from those which the Bureau of Public Roads has for use in its road work, we have a total of 84 automobiles. I can give the information to you by bureaus if you wish. Of the machines we have, 81 are Fords; 1 is an old Winton, which was used by the Bureau of Public Roads as a dynamometer car for making traction tests on roads, and when that work was completed it was turned into a bus for conveying employees of the department to or from Arlington Farm. We have, as you know, several field laboratories at the farm. We have one Chambliss

machine, which was purchased second-hand several years ago at a cost, I think, of \$700 or \$800. And we have one Buick in the Forest Service. We have 14 motor cycles, 13 of which are used by the Forest Service in the field, and we have 33 railroad speeders, used in connection with fire-fighting work. That is the extent of the motor equipment of the department, aside from that available in the Bureau of Public Roads for road work.

EXCHANGE OF ACCESSORIES, ETC.

The next item, No. 9, was carried in the appropriation bill last year and is permanent legislation. We are therefore omitting it from the estimates this year.

EXCHANGE OF VEHICLES, ETC.

The next is a new item. It authorizes the Secretary of Agriculture to exchange motor-propelled and horse-drawn vehicles and used parts, accessories, tires, and equipment. We now have authority to exchange motor-propelled and horse-drawn passenger-carrying vehicles in part payment for new vehicles, but we have no authority to exchange trucks. One of the purposes of this provision is to correct that discrepancy. The other purpose is to authorize the exchange of used parts for new parts——

Mr. RUBEN. Suppose you get a tire and there is a guaranty on it and you use it for a certain number of miles and turn it in and could get an allowance on it. You have no authority to do that?

Mr. HARRISON. Under existing law we may exchange old vehicles, used parts, accessories, etc., for new vehicles, parts, accessories, etc., provided they are "used for the same purposes as those proposed to be exchanged." The provision we are proposing eliminates the words "to be used for the same purposes," etc.

Mr. BYRNES. You hold now that the proceeds of a motor cycle, when sold, could not be used for the purpose of purchasing an automobile?

Mr. HARRISON. No; nor an automobile tire.

Mr. BYRNES. You are speaking of automobiles here "under present legislation an automobile can not be exchanged for a motor cycle, or vice versa, as a motor cycle can not be used for the same purpose."

Mr. HARRISON. You are right.

Mr. BYRNES. A motor cycle is used to carry a single passenger, and an automobile may carry one or more passengers.

Mr. HARRISON. That is not exactly the construction which has been given to the language by our solicitor. The construction is that parts, etc., of a motor cycle can not be given in exchange as part payment for parts, etc., of an automobile, and vice versa, and this is an attempt to correct it.

Mr. BYRNES. It looks to me like he has gone pretty far, because a motor cycle is used as a passenger carrier, and a passenger-carrying automobile is used to carry passengers.

Mr. HARRISON. Item No. 11, on page 302, was discussed by Dr. Mohler when he appeared before the committee.

Items 12, 13, 14, 15, and 16 were presented by Mr. Marlatt, chairman of the Federal Horticultural Board.

Item No. 17, on page 306, for the prevention of the spread of the European corn borer, has been transferred to the estimates of the Bureau of Entomology and was discussed by Dr. Howard.

Item No. 18, for the field station at Woodward, Okla., was presented this morning by Mr. Rawl.

Item No. 19 relates to short-time rural credits committee, was inserted by the Senate committee last year; and inasmuch as it is legislation, I presume, of a permanent character, until the committee makes its report we have omitted it from the estimates.

MILEAGE IN LIEU OF ACTUAL TRAVELING EXPENSES.

Item No. 20 is an item which has been presented for two or three years. Its purpose is to increase the mileage rate from 3 to 4 cents in the case of motor cycles and from 7 to 12 cents in the case of automobiles, that we may pay to employees of the department who use their own machines on official business. We have found it exceedingly difficult to work under the present rates. In many cases, especially in the remote sections of the West, it is absolutely impossible to maintain any machines for 7 cents a mile. Seven cents does not cover the operating cost. We earnestly hope that the rates will be increased as we recommend. I do not think it needs any discussion to show that the present rates are too low.

ACQUISITION OF SITES OCCUPIED BY CERTAIN STATIONS.

Item 21 is a general provision which authorizes the department to acquire by gift, devise, or purchase certain lands on which plant-introduction stations have been established. The task of taking title to these lands will be completed during this fiscal year, and it is not necessary longer to retain this item in the bill.

Item No. 22 is the item relating to seed grain loans which were made in the West during the war. As the purpose of the legislation has been completed by the issuance of the necessary regulations to put it into effect, it is no longer necessary to carry it in the bill.

Item No. 23, for the construction of a vault for the refrigerating plant, was discussed both by Mr. Reese, chief clerk of the department, and Mr. Rawl, chief of the Dairy Division.

INCREASE IN PER DIEM IN LIEU OF SUBSISTENCE.

Items 24 and 25 should be considered together. They have for their purpose the increasing of the present limitations on the amounts that may be paid employees for subsistence expenses while traveling on official business. The present limitations, as you know, are \$4 in one case and \$5 in the other. I do not think it requires any detailed discussion to show that these rates are entirely too low and should be increased in justice to the employees of the department.

PAYMENT OF STREET CAR FARES.

Item 26 is a general provision the purpose of which is to authorize the department to reimburse employees for street car fares expended by them when they are traveling on official business, and particularly

when they are traveling on a per diem allowance and expend street car fares in going to and from their place of lodging to the place at which they perform their official duties. The comptroller has held that when a man is traveling on a per diem basis street car fares are not reimbursable; in other words, it is held that street car fares expended in going from the place of lodging to the place of business, when the employee is in a travel status, must be considered as a subsistence expense. This provision is intended to correct one of those relatively minor things that cause so much criticism and discouragement among the employees of the department.

CUMULATIVE LEAVE TO EMPLOYEES STATIONED IN INSULAR POSSESSIONS.

Item No. 27 has for its purpose the extension to employees of other branches of the department of the existing provision which authorizes cumulative leave in the case of employees of the experiment stations in our insular possessions, including Alaska. The present provision is confined to the employees of the insular experiment stations, which means those under the jurisdiction of the States Relations Service. The purpose of this new language is to put the employees of the Bureau of Chemistry, the Forest Service, the Weather Bureau, and others on the same basis.

Mr. WASON. As the other departments?

Mr. HARRISON. I understand that some other departments have essentially similar provisions. Employees of the War Department serving in Panama have the privilege of cumulative leave for a certain period. They are so far removed that it takes so long for them to come to the mainland that much of their leave, on an annual basis, will be consumed in making the trip.

Mr. RUBEY. You say this now applies only to the States Relations Service?

Mr. HARRISON. Yes, sir.

Mr. RUBEY. You want it to apply to men who may be in Chemistry?

Mr. HARRISON. The Bureau of Chemistry has some employees in Porto Rico, and the Forest Service has a number of employees in Alaska.

Mr. WASON. How does the provision for the Department of State read; is this similar to that? As I recollect it, it is.

Mr. HARRISON. I could not answer that. I understand that the War and Navy Departments have provisions similar to this, and I presume the State Department has also.

Mr. BYRNES. You say it does apply to employees in the Canal Zone?

Mr. HARRISON. To employees of the War Department, yes. And there is a law which relates to our own employees in the insular experiment stations, which are under the jurisdiction of the States Relations Service; but it does not apply to employees in the Forest Service, for example. I can give you the number of employees who would be affected by this provision. In the States Relations Service there are 37 employees attached to the experiment stations in our insular possessions and in Alaska. In the Weather Bureau, there are 2 employees in Alaska, 7 in Hawaii, and 5 in Porto Rico, making a total of 14. In the Bureau of Chemistry, there are 4 in Porto Rico.

In the Forest Service, there are 30 in Alaska and 1 in Porto Rico, making a total of 31. In the Bureau of Biological Survey, there are 7 in Alaska. In the Bureau of Entomology, there are 2 in Hawaii. In the Bureau of Public Roads, there are 3 in Alaska. That makes a total of 61 employees who would be affected by this provision.

The next item, No. 28, was discussed by Dr. Howard, when he appeared before the committee. On page 311, item No. 29 was presented by Dr. Alsberg.

Page 312, item No. 30, with your permission, will be presented by Dr. Ball when he appears before the committee on Monday.

Item No. 31 does not go into the bill; it simply complies with the provision of law and indicates the rates which we have fixed for employees traveling on per diem in lieu of subsistence.

Mr. ANDERSON. That is not an item carried in the bill; it is simply an item of information.

Mr. HARRISON. It is not carried in the bill. You understand, Mr. Anderson, that all our employees do not receive \$4 per diem while traveling on official business. We have a graduated scale beginning with \$1.20 and running up to \$4, depending on the section of the country in which the man is traveling and the kind of travel to be performed.

Mr. BYRNES. Where do you allow the \$1.20?

Mr. HARRISON. Where, for instance, he is camping out. In other words, we have divided travel into certain general classes and have tried to fix rates which would just cover the cost of subsistence. When a man is traveling in the large cities we, of course, give the \$4 per diem.

That completes the various items. I would like to express our deep appreciation for the patience with which you have listened to the presentation of the estimates, and particularly for the unfailing courtesy which all of the members of the committee have shown the members of the department who have appeared before it.

Mr. ANDERSON. I feel the department has tried to present the matter in a very satisfactory way, and they have done so.

MONDAY, JANUARY 10, 1921.

Mr. ANDERSON. The committee is fortunate in having with us this morning the Secretary of Agriculture. We will be glad to hear from you, Mr. Secretary, either generally or in respect to any items which you desire to discuss.

STATEMENT OF HON. EDWIN T. MEREDITH, SECRETARY OF AGRICULTURE.

GENERAL STATEMENT.

Secretary MEREDITH. I do not have it in mind, Mr. Chairman and gentlemen, to make an extended statement. If I should really start in to discuss fully the appropriations, needs, and value of the work, I am afraid it would occupy the remainder of the time that you can devote to hearings, and Dr. Ball will go more into detail. But I do wish to say a word about the theory I had in mind when we went over these estimates.

PERSONNEL.—SALARIES.

In the first place, I would like to emphasize the matter of personnel. If the Department of Agriculture is to function to the highest point, if it is to operate on the most efficient basis, the same as any other institution, we must be in position to secure and hold capable men and women. Personnel, therefore, is of vital importance. We have recommended salary increases in some place—increases which in my opinion are fully justified—and I sincerely hope that the committee will approve them. We have recommended that authority be given for the employment of a director of scientific work and a director of regulatory work in order that research and regulatory activities of the department may be more adequately supervised and more closely coordinated, and that we may get the greatest efficiency out of the personnel and out of the appropriations that are provided.

I want to put the emphasis on the importance, as I see it, of making possible the employment of these directors, and at salaries that will bring men into the department who can sustain themselves properly and be happy in their positions. There are many men capable of taking up the work, but they must have reasonable compensation—compensation which will enable them to maintain a satisfactory standard of living for themselves and their families. I could find any number of men who would be only too glad to undertake the work and who would render highly efficient service, but they can not afford to do so on a meager salary. So I have suggested \$7,500 as a minimum amount. This, I believe, is more than justified, especially when you consider the fundamental value and importance of the work which the directors will be called upon to administer.

Then, we have asked that provision be made for increasing the salaries of the chiefs of bureaus, and that the present limitation of \$4,500 on the compensation that may be paid to scientific and technical workers be increased to \$6,500. There are men in the department, if I had time to mention particular cases, who are working for a half and a third and a fourth of what they have been offered outside the department. They are of the utmost importance to the department, and their work is vital; they have families to sustain, and they should be paid more money than they are getting. I appreciate that we can not expect the Government to meet the salaries paid by commercial concerns, and we do not ask that; but we do ask that, in view of the time that has elapsed since the present limitation was established—I think in 1914—we be given the privilege of paying, where necessary, up to \$6,500 to scientific and technical workers.

This does not mean at all that there will be a large number of increases to that figure. There will be none during my term of office, and I feel sure that the next Secretary will not abuse the privilege. I think the members of the committee will agree that in the years that have elapsed since the limit of \$4,500 was fixed the authority has been exercised very conservatively. As I have said, if the limit is increased to \$6,500, it is not the intention to raise the salaries of all employees, or of any considerable number of them, to that figure, but in some instances men who are handling highly important projects and who are vital to the work of the department

should be given that pay. And, more than that, the men who are now receiving \$2,000, \$2,500, or \$3,000 will see \$6,500 ahead of them some time in the future, while the existing limit of \$4,500 is more or less discouraging to them, especially when they contemplate the much higher salaries that are paid by commercial concerns and, in fact, by other scientific institutions. In other words, you will increase the efficiency of the \$2,000 and the \$3,000 men, because they will have a goal of \$6,500 ahead of them.

The chiefs of bureaus in the department are decidedly underpaid. They are charged with very important responsibilities, and their compensation should be increased. Their present salaries are far below the rates prevailing in the commercial world and do not equal the salaries paid by other scientific institutions or, in fact, by other branches of the Government. I realize the difficulties with which you gentlemen are confronted when it comes to increasing salaries and when it comes to increasing expenses, but, as a business proposition, in the interest of the service, I wanted to say this word in support of our recommendations and to urge that you give them the utmost consideration before you decide you can not raise salaries, because I think it is a very vital matter.

RESEARCH WORK.

The next thing I would like to discuss is the research work. In going through the estimates you will note that we have, in some cases, recommended the restoration to their former amounts of the appropriations which were reduced this year and that, in others, we have asked for increases in order to study more effectively some of the significant and vital problems in the field of agriculture, forestry, highway engineering, and the like. While I had an appreciation of what research means before I came to the department, it was nothing compared to the way I feel toward it to-day. The various lines of work under way and proposed have been fully presented to you by the chiefs of the bureaus, and I am sure that if a review were made of what has been done in connection with the control of hog cholera, the eradication of the cattle tick, the elimination of wheat rust, and in reducing the many hazards in agriculture generally—all those things that are based upon the studies of the research worker—I am sure you will agree with me that we can not place too much emphasis upon the value of research. I am not prepared to say what the work on corn diseases, which was discussed by the Bureau of Plant Industry, has cost—probably about \$75,000—yet it may mean a saving of millions of dollars a year every year forever. And there are many other research projects under way in the department which are just as important and just as far-reaching as the work on corn. When I say “research” I am not using that phrase in a narrow sense. I have in mind not merely the work of the chemists, biologists, pathologists, agronomists, etc., but the work of the whole body of trained men and women who are prosecuting investigations, or who are engaged upon activities that have to do with any phase of agriculture, forestry, and highway engineering, including cost of production studies, farm management and marketing investigations, studies of forestry and highway problems, etc. I sincerely hope that

you will give sympathetic consideration to all the recommendations we have made regarding research projects, and that you will see your way clear to deal liberally with them, so that they may be carried forward on the most efficient basis during the next fiscal year.

COOPERATIVE MARKETING AND BUYING.

I want to say a word also about the broad question of marketing, a subject in which the farmer is vitally interested and which is of the utmost importance to him. We have talked production—and we need production, certainly—but the farmer is especially anxious at this time to get help in marketing. He wants a study made of cooperative marketing and of cooperative buying, things that have to do with his business, as a business proposition. So we have asked for more money for our marketing work, for dealing with difficult and complex marketing problems, for developing the market news services and the crop and live-stock reporting system, for securing information regarding the markets for agricultural commodities in foreign countries, for the working out of standard grades for farm products, etc., in order that we may give the farmer all possible help in connection with the large problem of marketing. It may interest you to know that, out of the 16 divisions in the Bureau of Markets—divisions dealing with cotton, wool, vegetables, live stock, grain, and so on down the line—8 are without permanent directing heads, because we can not secure the type of men we have in mind at the salaries we can pay under the existing limitation. This means that, because of the lack of personnel, one of the big helps to the farmer in marketing—the Bureau of Markets—can not function in the most effective way under present conditions.

If I may, I will close by emphasizing that more money is not so important unless we have and can hold the right sort of personnel—men and women who can expend the money so that we will get the greatest good from it; and even men with money can not render the greatest service unless they have the necessary knowledge upon which to operate, and this knowledge must be supplied through constant research effort. But with an adequate personnel, with research properly supported and developed, and with emphasis placed on the work in marketing, farm management, farm economics, etc., we should be in a position to render a great service to agriculture—a service which it needs so much at this particular time.

I do not know that it is any argument—I do not urge it as an argument; I only state it as an interesting fact—that, out of all the money this Government is spending, only about one-fourth of 1 per cent is devoted to work relating directly to agriculture. In other words, if we leave out of consideration the funds for the enforcement of the Food and Drugs Act, the Meat Inspection Act, and a number of other regulatory laws, for the administration of the National Forests, forestry, and other things which are for the general good rather than for agriculture, our appropriations for agriculture aggregate from one-fourth to one-third of 1 per cent of the total amount appropriated this year.

Now, on the basis of a \$4,000,000,000 budget, which is generally referred to and which represents a reduction below the amount for

the current year, if you give us what we have requested for all our projects—an increase, approximately, from \$31,000,000 to \$41,000,000—you will then be giving to agriculture only from one-third to one-half of 1 per cent of the total appropriations. Certainly an appropriation of one-half of 1 per cent for aiding an industry as fundamental as agriculture—which is so much in need of help to-day, which needs research, which needs to be relieved of the hazards arising from insects, pests and diseases, which needs better varieties, which needs assistance in marketing, and in many other directions—certainly one-half of 1 per cent is not a burden upon the people. If you could take this bill and eliminate some \$20,000,000 to \$25,000,000, or cut an item that would really result in a considerable saving, that might be a different story; but, if you are going to take \$2,000,000 or \$3,000,000 out of the bill, and thereby compel the curtailment or abandonment of many vital and important activities, it seems to me that is a question that should be weighed carefully.

For instance, in the last bill the hog-cholera appropriation was reduced by nearly \$250,000. But that money was not really saved, gentlemen. Of course, nobody can put down on paper what it has cost this country because of the apparent saving of \$250,000, but I feel certain that it has cost \$25 for every dollar saved, so far as the farmers are concerned.

TUBERCULOSIS OF CATTLE.

The sum we have recommended for work on tuberculosis of cattle is not large enough and should be increased. You can reduce the estimate, but we are losing tens of millions of dollars a year because of tuberculosis in cattle, and the question is whether a sufficient amount will be provided this year, or whether the appropriation will be cut down and the work handicapped. I had many telegrams during the summer urging us to go ahead with the eradication work in certain sections, the testing and establishment of accredited herds, but, in most cases, we could only say that we did not have the money. There is now a very large list of herds on the waiting list.

I could go through the estimates item after item, but I will not take the time to do so. I wish to say, however, that every item has been scanned carefully and that some of them have been reduced below the amounts originally suggested by the bureau chiefs. I personally have tried to handle the matter as carefully as I knew how; but, as a business proposition, if I owned the institution, the appropriations would be considerably larger than I have recommended. There is no doubt in my mind that the money we propose to spend on agriculture would be well worth while as a cold-blooded business proposition.

IRRIGATION AGRICULTURE.

There is an instance of the effect of reduced appropriations to which I would like to call your attention. The item for the study of irrigation agriculture was reduced by approximately \$20,000, or from about \$72,000 to \$52,000. As a result, it became necessary for the department to close three of its field stations, located at San Antonio, Tex.; Fallon, Nev.; and Hermiston, Oreg. Members of

Congress from Texas and Oregon urged that the stations in their States be kept in operation. While it was necessary to discontinue practically all work at San Antonio, an arrangement finally was worked out by which we succeeded in saving the Government's investment in crops, trees, and shrubs. In Oregon, the agricultural college found the money—\$3,000—to keep the Hermiston station open during the first part of the fiscal year, in the hope that Congress would provide sufficient funds to operate the station during the remainder of the year. Three thousand dollars was cut out of the appropriation, and it did not look as if it would do particular harm, yet it threatened the work of a field station which is rendering important service to a large section of the country. And I could go on and cite many other instances of the sort.

I do hope that, notwithstanding the fact that it is desirable from all standpoints to reduce the cost of operating the Government, you gentlemen will deal very liberally with agriculture and that you will give it the benefit of the doubt—if any doubt arises about any item—rather than cut a few thousands off here and there. I hope also that you will give us the privilege of explaining the various items more in detail, if you so desire, because we are very earnest about this and exceedingly interested in each and every item in the estimates.

I thank you for the time you have given me. I only wanted to come up and express my very deep interest in the matter.

Mr. ANDERSON. We are very much obliged to you, Mr. Secretary.

Secretary MEREDITH. I wish to thank each of you for your attention.

MONDAY, JANUARY 10, 1921.

STATEMENT OF MR. E. D. BALL, ASSISTANT SECRETARY OF AGRICULTURE.

CROP PRODUCTION.

Mr. BALL. Mr. Chairman, I do not think this committee needs to be told what the Department of Agriculture has done for the American Nation in the years past. I believe that is evident to almost everyone. There are some things in a general way, however, that I do want to take up, if the committee will give me a few minutes, that have nothing to do with this bill directly but have a tremendous importance indirectly.

I have a series of charts here that I wish to have you look over for a few minutes, if you will, and to discuss with you a situation I have been studying for a number of years as dean and director of agriculture in a Western State, where I began the study of the situation of agriculture in America as compared with the situation in the world. I call your attention to this first chart here from the standpoint of our American agriculture. You will notice that it shows the ratio of crop production to the population of the United States from the Civil War down to the present time, and it shows a tremendously rapid increase in crop production as compared to population in this country all through the 70's and 80's and up to 1898, the highest point reached.

Mr. ANDERSON. Does this include beef production?

Mr. BALL. No; this is for the various crops. Of course, beef is dependent on the crops. This includes hay and corn which make

beef. It is really the basis of everything that is produced, so that it really represents the animals as well. It does not, however, include the range grasses.

The black line on this chart shows a running 10-year average; and it is always 10 years behind the actual. The waving line is the actual production per year. I want to call your attention to the fact, however, that the average crop production reached its maximum 10 or 15 years ago, and has been going down steadily since then, even in spite of the tremendous effort we made during the war period to increase it. It has been going down and going down rapidly; it has been going down so rapidly, in fact, that in 15 years, with the normal rate of increase in population and the normal rate of increase in crop production, we will be a Nation importing food rather than a Nation exporting food. The truth is we are an importing Nation to-day, because we import sugar, coffee, teas, spices, and tropical fruits in excess, in dollars, of the amount of staple foods, like wheat, corn, meat, and butter, which we export. We will always import our coffee, spices, and tropical fruits, but in 15 years we will actually be an importing Nation of the staple foods of life, unless some radically different program is adopted.

The next chart emphasizes that. It shows the United States production and export of wheat and corn by five-year periods. In the second column it shows the production in million bushels. It shows that wheat kept up in production with the increase in population until we reached practically the maximum of 728,000,000 bushels for the five-year period of 1910-1914, with the exception of the period of war production, which was made at the expense of other crops, especially cotton. The cotton production went down 3,000,000 bales during the war period, and even then the war production of food only went up a small amount, and it has fallen back at the present time to 750,000,000 bushels of wheat, showing that the wheat production has practically ceased to increase. Not only is the production of wheat not keeping up with the increase in the population of the country, but corn is even worse. The highest production of corn in America, for a five-year period, was for the period 1906-1910. We are not producing actually as much corn to-day as we were 10 years ago, and our exports of corn have gone down to 18,000,000 bushels last year, of which 16,000,000 bushels went to Canada. We are not shipping corn as corn at all, and we are only shipping 150,000,000 bushels of wheat, which, at 5 bushels per capita, would take care of 25,000,000 of population, and 25,000,000 of population would be the normal increase in 15 years.

Mr. WASON. These decreases, Dr. Ball, are due in part to the constantly decreasing proportion of our population that engages in agriculture, are they not?

Mr. BALL. No.

Mr. WASON. Has not that been decreasing?

Mr. BALL. Our constantly decreasing population engaged in agriculture, as I interpret it, is very largely due to the efforts of the Department of Agriculture in increasing the production per individual. That has been largely the effort of the Department of Agriculture up to the present time. That is what I want to get firmly in your mind, because that is the basis of what I am proposing. We

have had plenty of land in the past, but that land has been taken up now, and, therefore, our whole drive in America has been to increase the amount the individual could produce. We have doubled the amount of wheat the individual could produce by the development of farm machinery alone, by the header and by the binder. I bound by hand in the old days, and I know what it meant, and I know how much wheat one man could produce. But now we do not bind by hand; we have the header and the combined harvester and thrasher, which have made it possible to double and to quadruple the amount the individual can produce. Our present method of handling corn by which we have one machine that cuts the corn up as it goes through the field, ready to be delivered onto the wagon box and then into the silo, in one operation, has doubled and trebled the amount of corn you can handle.

Mr. WASON. But doesn't the fact still remain that only 30 per cent of our population is engaged in agriculture now?

Mr. BAILL. Yes; and unless we develop either more acres or more production of the acre we can not put more people on the land. Each man must have enough to do; that is what I am trying to bring out in this discussion here, and I will get to that question in a moment, if you please. But before I come to that I want to bring up in a logical way this third chart, which shows the increase of population in the United States and the principal countries of Europe for 110 years, beginning with 1800. That is one of the most significant charts I have ever seen; it is a historical sermon in itself. On top of the European countries has been put the curve of the United States, represented by the solid black line, and I want to call your attention to all the lower lines representing the European countries. This chart shows the relative increase in millions. If you will look at the bottom of the chart you will see that Norway, Sweden, and Portugal only increased 2,000,000 in 110 years; Spain increased 8,000,000 in 110 years. Then, higher up on the chart, look at Russia and the United States. Russia and the United States are the only two countries on that chart that are producing an excess of food; the rest of them are food-importing countries. Now, I have not only checked that result for the countries shown on this chart but I have checked it with all the figures I have been able to get of the other civilized nations of the world at all comparable with those, and I find the same thing to be true. When a nation becomes a food-exporting nation its population increases rapidly as does its industries and its commerce, and the gains do not differ greatly from the rapid gain which the United States and Russia experienced, such as you see on this chart. When they become food-importing nations you must compare the population increase and industrial development with these slow-growing food-importing nations down at the bottom of the chart.

The reason for that is very plain to be seen. The minute you become a food-importing nation, then the cost of food becomes so high that it is practically impossible for that nation to develop; it can not develop a greater population, because there is not the opportunity for industrial development; the cost of food is too high, and the people and industries will move away from that nation to one that has relatively an abundance of cheap food. Now, the United

States is changing in the next 15 years from one type of nation, which it has been throughout all of this century, to another type of nation, which it will be in the future unless it makes a very great effort as compared with what it is now making. If it does not, its curve in population will immediately, or very soon, take the other form and we will have a very slow increase.

Now, the business men in this country who are building railroads, who are building factories, who are figuring on any kind of industrial development, are vitally interested to-day in food, and whether we are going on and continue to grow or whether we are going to cease growing. I gave this talk in Chicago. Chicago has grown in 50 years to 3,000,000 people, and has become the fourth largest city in the world, and she has grown there because she has the most tremendous abundance of cheap food of any city in the world. That is a most phenomenal growth. New York is 300 years old, and London was founded before Christ, but Chicago was founded only a few years ago. I went through Chicago when she was lying in ashes from her great fire, and had to start again from nothing, and I am not so very old. That is the most wonderful growth any city has ever made from the beginning of history.

That, gentlemen, is the problem we are facing to-day. Is America willing to content herself to a change from her present curve, or is she anxious to have that curve continue as it has in the past? This is not a question for the farmer; it is a question for the business man and a question for everybody to consider, and to consider very seriously; it is a question of our national business as a whole.

On the fourth chart I want to call your attention to the New England States, which were settled in 1620. In 1790 we took our first census of the United States. That was after 170 years. The population at that time was confined to a little strip along the New England coast; it was 3,900,000. There was no food to export up there; that is the most rocky and inhospitable place there is, as far as food production is concerned. I was born there, and I should know.

Mr. WASON. When you say the New England States had that population, you do not mean all of that population was confined to what is now known as the New England States?

Mr. BALL. No; not what is now known as the New England States; but it had grown up there on the coast and was just moving westward.

Mr. WASON. It was the population confined to the Atlantic States, down along the coast?

Mr. BALL. Down along the coast; yes.

Mr. WASON. As far as South Carolina, perhaps?

Mr. BALL. Yes. I want to call your attention to the fact these big dots show, on this fourth chart, the comparative value, on farms, of all crops produced in 1918, by States. From Texas around up the coast to Virginia, the excess production is largely cotton. It used to be tobacco.

Mr. WASON. Yes. But I wanted to get into the record the fact that the population you gave included all the Atlantic Coast States, and part of which were the New England States.

Mr. BALL. Yes. I get your point, I was not differentiating the Atlantic Coast States. In that period of 170 years the colonies went from nothing up to a little less than 4,000,000. In the next 100 years,

in which we moved westward into the big food-producing areas of the Middle West, the population went from 4,000,000 to 64,000,000—60,000,000 increase; the greatest increase any civilized country ever made in 100 years. The very slow growth in the beginning, from 4,000,000 or 5,000,000 in 1800, was because we had not yet become a food-exporting Nation. It was only when we became a food-exporting Nation, when we developed the railroads and got the food to the seaboard, and began to be an abundant food-exporting Nation that we began to grow. And we have made that most phenomenal growth the world has ever seen simply because we had been developing that great upper Mississippi Valley and Ohio Valley, in which there has been a wonderful food production.

Now, the question is what are we going to do. After that 100 years, from 1790 to 1890, the next step was to develop the great western area; but now we have not any more large areas of fertile land out there to develop. I spent 20 years of my life in the West, 15 years of that time in Utah, and I want to tell you that it would take more effort to double the size of that dot in Utah than to double the size of the spot in Iowa. That is why I left that country; I wanted to get where agricultural effort would accomplish more.

MR. WASON. There seems to be a chance to increase it in Missouri.

MR. BALL. Yes; there is a chance to increase it in Missouri. [Laughter.]

MR. RUBEY. I am perfectly willing. That is one reason why I have been urging so large appropriations for agriculture since I have been here.

MR. BALL. Now, if we are going to keep up our increase in development that the growth of population of the United States has shown in the past, and along with that goes industry, then I want you to refer back to this third chart and ask you to look at the difference between the curve of Germany and the other European countries. There is a great sermon pictured there. I do not love Germany any more than anyone else here, but I am impressed by one thing in it. If you will notice on this second chart, she started with 25,000,000 population and went along gradually until 1870, when Bismarck took hold of things and they willed that Germany should support herself as a self-sustaining nation. And when they did that, notice the difference in the growth as compared with the growth of France. Germany started below France and finished away above and above Austria-Hungary, and far above any other nation of Europe, because she spent more money per capita in developing her agriculture and industries than any other European nation—five times more. And as a result of this, when she planned this war, she did not expect to win by use of her soldiers alone. Dr. Vernon Kellogg, who was next to Herbert Hoover in Belgium relief work, spent many months living with the German officers. You know officers in the Army have as much faith in themselves as a man need have.

And yet every time their arms met a reverse, every time their submarines were conquered, when their aeroplane attacks were defeated, and when we succeeded in meeting their gas attacks, they would say, "Oh, just wait; our scientists will find a way to conquer yet." Her scientists! Germany built her whole system on

the efforts of her scientists; she subsidized her scientists and scientific work. She stole the dye industry from England by putting money into it and subsidizing it by the Government. She took manufacture after manufacture, industry after industry, away from the allied nations by that system. Now, she did it for a purpose we do not wish to emulate, but we can look over the results and see what she was able to do by that system. We can adopt the system and use it for a different purpose. You can see what Germany did. That curve only tells the tale of her growth of population; but just as sure as population grows industry grows, and national wealth grows, and so does everything that goes to make up a prosperous and contented nation. And Germany was that. She did it, unfortunately with a wrong idea, but she did it, and that is the thing that is important to us.

I want to call attention to one more chart, which shows the path of supremacy in the world for 54 centuries. That shows from 34 centuries before Christ, the very first history we have, with upper Egypt and Babylon clear down to Chaldea, the principal nations that controlled the world were in a temperature of 74 to 78° F. That is much higher than the temperature of this room at the present time—a high, almost tropical temperature. Then as world civilization developed they gradually moved away from the tropical temperature to the temperate regions and steadily until the time Rome fell, when you see the curve drop back to the warmer temperatures. It dropped back there once, and, with that exception, through these centuries the control of the world has been moving away from the tropical countries toward the temperate countries until the control of the world is now by countries with a temperature of from 48° to 50° F.; that is, the average mean temperature of the countries now in a position to control the world.

There is one very encouraging thing to me in that chart, because I have been dreading Russia and her influences. You will notice on the chart where Petrograd and Moscow are and look where Quebec is, and you will see that it will be several centuries at least before the control of the world can even pass as far north as that. You will also notice that New York, Berlin, Paris, and London are right in the pathway in which national development and world supremacy is going to be fought out in the next generation and in the next century, and one of those countries is going to lead in ruling this world. Which one? That will largely be determined by the will of the individual country to do or not to do it. It is not going to be settled by hazard; it is going to be settled by the country that makes up its mind to lead and is willing to support its determination by putting its money into it.

Now, what has happened? When the allied nations saw what Germany was accomplishing with her scientific men, they brought their scientific men together and organized them for defense, and as a result the war was won. The war was not won by soldiers; soldiers held the line, but in back of that line organized, aggressive scientific effort furnished the means that won the war, and if they had been given a little while longer, would have carried it back to its origin. As a result, the other nations of the world have learned to appreciate the value of scientific organization. England has appreciated it

and has voted a million pounds (\$5,000,000) for research. On the basis of the per capita of her population as compared with ours, that is more money than the United States is expending in research.

She is appropriating that as an entirely new fund for research in industrial and agricultural development. I was dumfounded when I studied the budget of France. The French budget of this year shows 148,000,000 francs for the ministry of agriculture. This would be \$29,500,000 as against our \$32,000,000, and she with a population of less than 40,000,000 and we with a population of 106,000,000. It shows what those countries are realizing. They realize if they are going to compete in any future war and in the struggle for trade supremacy of peace, they must put money into the development of industry and into the development of agriculture. Agriculture is the foundation of industry. You can not build up industry without food. Food is the first and primary thing. On top of food, then, you must cultivate industry. Germany recognized if she was going to build up a world-conquering nation, she must be as nearly as possible a self-sustaining nation to protect herself at any time. We can not build up a great population in excess of food here unless we build up a great Navy to protect us so that we might get food somewhere else. But you can spend that same amount of money, or one-fourth or one-fifth of it, in developing a self-sufficient agriculture and then save the rest and at the same time develop a happy and prosperous Nation. The world is going to develop food somewhere; the only question is whether we are going to develop it or some other nation.

I want to show one instance—a particularly striking instance—of what money expended in science will do. It is a lesson the United States ought to take to heart in more ways than one. In 1900 the rubber industry, which is a thing vital in war, was centered in Brazil. Twenty-seven thousand metric tons of rubber were produced in Brazil in 1900, while only 4 tons were produced in the East Indies. The English and the French Governments put money into the scientific development of rubber in the East Indies. The South American countries have never done that; they have just allowed their rubber industry to take care of itself. In 1913, by means of this scientific development, the East Indies produced as much rubber as Brazil. In 1919 the estimate is that the East Indies produced 235,000 metric tons of rubber, against 35,000 tons for Brazil and 10,000 for all the rest of the world—235,000 metric tons of crude rubber from the East Indies as a result of scientific development, as against 45,000 tons from all the rest of the world. Taking the rubber production clear across the ocean for us would, in the case of war, mean a serious handicap to this Nation. I am using it now only as an illustration of what science can do for industry just by a little investment of money.

The Secretary gave you the gist of the last chart there. That chart shows you what our budget for the last year was, showing that only 1 per cent of the revenues of the United States were expended toward research, education, and development. If you will take the circle to the right, which shows agriculture as 62 per cent, they credited the whole of the agricultural appropriation of \$32,000,000 to education, research, and development, while in fact \$20,000,000 of

devoted to regulatory work; that is, work for the protection of the consumer and not for the development of production. So that appropriation only 40 per cent actually goes to education, research, and development in any sense. Therefore, as I figure it, out of a hundred dollars expended in the United States, not one dollar goes to education, research, and development, but only 30 cents. Figure per capita, it is 28 cents per capita expended in these things toward building our Nation. Now, if you go out and build a battleship, in 10 years your battleship is ready to be sent to the bottom of the ocean and you have nothing. If you will go out and develop the productive power of the acres of this country by 1 per cent, that is a gain for ever and ever. We increased in 30 years the production of wheat in this country from 12 to 14 bushels, or 2 per acre. Germany in 1914 produced 32 bushels per acre. See what we have as a possibility ahead of us. That does not mean 32 is the maximum; that is just what Germany has reached. We have a wonderful future ahead of us; we can take the acres we have and the other acres not yet developed and continue to increase the production of food in this country as rapidly as the population increases for 100 years, if we want to.

In the case of Chicago, Chicago will be a 10,000,000 city and not a 3,000,000 city. On the other hand, if you let things go as we are drifting along and do not increase production, the price of wheat in Chicago, now the price of wheat in Liverpool less the cost of shipping board and carrying it across the water, freight, tariff, and insurance—the price of wheat in Chicago will be the price of wheat in Liverpool plus all those things. And when that day comes, industry and commerce are going to go where food is cheaper, and we can not grow under such a condition as that.

At a meeting in New England not long ago where the manufacturers organized an agricultural society. The speaker on the subject said they realized that it cost \$2.42 per man more per week to run a mill located in New England than in the western food-producing region where their competitors were, and that they were going to develop a greater agricultural production in order to reduce the cost in New England. If that is what it costs New England compared to the West, what would it mean if we had to get our food from Australia, or Russia for our food? It would mean the Government would be forced to go to those countries.

This is the great national problem that we have to face. If we wait until we actually become a food-importing nation, the changes will have then taken place and there will have to be adjustments. If we are going to continue to grow in industry, science, and wealth now is the time to decide. That decision means increased appropriations as much as it means a definite turning toward that development and the shaping of every dollar that is expended toward that end. To me it is the biggest question is before the Nation to-day. If we make up our minds we are going to continue to grow as a Nation, success hinges on a few things: We have first to increase the production of the food, and that can only be done by increasing the possibilities of production. Our extension work and our large effort of the present has been toward bringing up the poor farmer to the aver-

age of the good farmer, and as long as we do that we will increase production. But there will come a limit and we will get up to the roof. So it means greater emphasis on increasing the possibilities of production of the present acres. That means research; that means new varieties of plants and new strains of animals, better use of the soils, and a thousand things along those lines, every one of them involving long series of research problems. It means taking off the handicaps that now exist, getting away from the tick situation of the South, from citrus canker, wheat rust, and a thousand other of those things.

Those all take research, and research is a long-time proposition. That is why you have to start now if you want to get anywhere in 15 years. You can not wait until the end of the 15 years before you start. You might make a war drive in extension and increase production in a short time, but an increase of the possibilities of production can only be developed by an increase in fundamental research that will ultimately lead to those things.

Mr. WASON. You mean by fundamental, scientific research?

Mr. BALL. Scientific work; yes. There are two kinds of scientific work, if you please. You go out here and see a problem and find something you can do quickly and easily. It is not really a problem of any importance, but it is something that will help a little. On the other hand, here is something which will take 10 years to develop before it will give any benefit at all. We have left those things undone, because there were so many things of more immediate importance that might accomplish something; but there are many things we know to be the most fundamental things, the things on which our great development hinges, which we have not begun.

We first built a railroad across the Isthmus of Panama and then built the canal later. A pioneer railroad winds through the country and avoids the big fills, the big cuts, and the tunnels. Later on you straighten the road out and make the cuts and fills and bore the tunnels. And we have come to the point to-day where, if we are going to build ourselves a great highway of national development, we have to make the big cuts and fills and straighten it out; we have to bore the big tunnels. We have climbed over these mountains long enough, and now we have to tunnel through.

Mr. MAGEE. You have to crystallize the sentiment of the people that agriculture is most important.

Mr. BALL. We have to impress business with one idea, and that is this—I believe it is fair to make this statement—that not one dollar of the appropriation to agriculture, so called, is for the benefit of the farmer. We do not appropriate a dollar to the carpenter, or blacksmiths, or dentists, and why should we appropriate a dollar to the farmers.

Mr. MAGEE. You might be able to live without them, but you can not live without the production of food.

Mr. BALL. That is it.

Mr. MAGEE. You are getting down to a fundamental thing; you can not live without agriculture.

Mr. BALL. We do not appreciate that in helping the farmer we are helping ourselves. Of course the farmer gets his food, but the whole effort of the Department of Agriculture here has been to

enable that farmer to produce more food, because every bushel more he produces means that much more that we can buy from him. If he only produces enough to keep his own family, he gets it, but every bushel he produces beyond that we get. Our drive so far has been to enable each worker to produce more food. Our drive in the future has to be in a national way to make every acre produce more food, and that takes more research and more effort than when we had all kinds of new land and all the man had to do was to go out and take up a farm and start to make a profit. We must develop more land, but we are not going to be able to develop anywhere near enough land to take care of the increase in population. We must develop more production on what acres we already have if there is to be a big national policy of development.

When a man in a business line develops something you give him a patent or a copyright or some form of protection for 15 or 17 years, by which he is able to monopolize and commercialize his discovery and get a reward from it, and, in fact, it runs on much longer than that, because you keep adding to it. On the other hand, suppose a man should discover a new variety of corn which would produce 5 bushels per acre more than any corn we now have. That would be the greatest discovery we have ever had in America. But what could he get out of it personally? It takes a tremendous lot of long, hard, patient research to do that, and what could he get out of it? He would have to send that corn around to different sections to see whether it was adapted to the various localities where corn is grown and whether it would prove, under different conditions, to produce that excessive yield. Every one of these men who tested this corn would at once become competitors and share the profits of his discovery. On the other hand, if that man developed a cornbinder and sold it to a farmer, when that cornbinder was worn out that farmer would come back to him and buy another. But instead of buying another bushel of corn and paying another excessive price the farmer who buys his seed turns around and becomes a competitor of the discoverer. That is why any development in agriculture has to be through the support of public funds, while the development of industry can very largely be left to the support of private funds.

Now, what must we do to prepare for a great national development? It is inevitable, as the Secretary pointed out to you, that we will never make any great advance without leadership. We could never have built the Panama Canal with gold alone. You have to have men, a leader, a man with vision, a man of power, a man with organizing ability, if he is going to put through any great national project. It would not be any great question of money. The French put money enough into the Panama Canal to build it; but it is not money, it is organizing ability, it is leadership, that it takes to do things. If you arrange to give any amount of money you please to the Department of Agriculture and do not arrange so far as it is possible to obtain and hold men capable of leadership you will never be able to provide for the accomplishment of the big things in this world. Leadership is far more important than money. You must arrange to reorganize, if you please, the Department of Agriculture along lines that will give us possibilities of developing and retaining leadership.

DIRECTOR OF SCIENTIFIC WORK.

The executive committee of the Land Grant College Association of America has been studying the problem of improving the organization of agricultural research and they interviewed your chairman before these hearings began and urged two measures to assist in accomplishing this result. The first of these was that a director of scientific work be provided for and the second was that the maximum salary be raised sufficiently to allow the department to obtain and hold leadership in the administration of its various projects. At the request of Secretary Meredith I have been studying these problems and arrived at exactly the same conclusion before the executive committee sent in its recommendation.

The department is carrying on approximately \$12,000,000 worth of research work while the 50 experiment stations in the United States are expending about \$5,000,000. Each one of these experiment stations has a director who spends the greater portion of his time in becoming familiar with the research problems and in encouraging and assisting the scientific workers, and providing for a general correlation and cooperation between the different lines of work so that the whole program of the experiment station may be directed toward the solution of the vital problems of the region.

The Department of Agriculture has no such individual at the present time. There is no one who can devote his time to the research work of the department as a whole or who can arrange for cooperation between the different bureaus of the department and between the department as a whole and the States.

Mr. WASON. I supposed that duty devolved largely upon the Secretary of Agriculture.

Mr. BALL. The Secretary of Agriculture has just about the same relation to research work as the president of a college has to the research in the experiment station. His functions are just about as close. The president of a college has to go out and make speeches; he has to meet committees; he has a thousand public duties and a thousand matters of routine. The Secretary of Agriculture is in the same way a public official. He must represent the department in many conferences and at many gatherings. He must prepare reports and budgets. He must meet committees and individuals and attend to a multitude of minor but necessary matters. Even the assistant secretary is loaded down with routine work. Congress has provided many duties from the licensing of warehouses to the certifying of tubercular-free herds that in the aggregate provide a volume of business that even at the present time is seriously interfering with many public engagements that should be met. The appointment of these directors would not only assist in bringing about greater efficiency in the work of the department as a whole but of even more importance would be the development of a more perfect coordination and cooperation of effort between the department and similar work carried on in the States. There is still another phase of the problem that is rapidly growing more important. Commerce and industry are appropriating larger and larger sums to be used along research lines. Much of this will inevitably be directed toward selfish lines but the greater part of this research could without diffi-

y be organized and directed toward a unified national development with a relatively small amount of effort and cooperation on the part of the National Government.

If we are to solve the problems before us and keep our Nation in the forefront of world development there must be a much greater effort to bring about cooperation and harmonious-working relations between all lines contributing to those ends. No State in the Union would think for a minute of going without a director of its agricultural research. Time has shown the wisdom and the economy of that kind of administration. There can be no question but what it is relatively much more important to have the same provision in the Department of Agriculture because the interests are so much greater and the relationships so much more complex.

SALARY OF SCIENTIFIC EMPLOYEES.

The second important matter for which we are asking is that the minimum salary of the scientific workers be raised to \$6,500. The way to have bureau chiefs and project leaders capable of handling great national projects is for the department to be able to get men capable of leadership in these lines of work and to hold them. The commercial industries in this country have seen what the organization of scientific men in this war have done in the way of development of new industries and of new methods and they have been quick to see what was good for war is good for peace. One canning association has taken two directors of experiment stations and one of former bureau chiefs and put them on their staff just to study their problems. They are seeking men at salaries far more than we pay. The result is the Department of Agriculture has been losing its leaders more rapidly than it has been losing its lower grade men. It is a problem we have to face. If we are going to do big things, we must keep the men capable of doing big things. And when commerce comes in to take men from the Department of Agriculture, it does not take the ordinary men or the weak men. It takes strong men.

We do not need to compete with commerce in salaries, but we must compete with the big universities and endowed schools if we are going to hold those men.

But before I take up that question I want to answer one question which has been put up two or three times in different hearings, and that is the statement the department of Agriculture men are better paid now than other lines of work. First, I want you to understand that the Department of Agriculture has more research men in its ranks than all other lines of Government effort put together. That is something not understood. So if we do put a small number of men on comparatively fair salaries we are not to be compared to any other division, but compared with all other divisions, as far as research work of the Government is concerned. I have two tables. One is of the men even listed as doing scientific work, and the other one is showing that group down to the really technical research workers leaving out the helpers. Taking the whole group, the Department of Agriculture has 3,778 scientific men; all other bureaus, so far as we can get the record, have 3,296. If you will limit that to the

men who are actually contributing research work, the Department of Agriculture has 2,240 and all other bureaus, on the same basis, as near as it can be compared, have 2,092. So the Department of Agriculture has more than all other departments of the Government put together.

Therefore, when you come to consider the salaries paid in the Department of Agriculture to its scientific workers, you must consider it in that light. Now, we are asking that there shall be a provision made whereby it will be possible to raise the salary of some of the scientific workers of the Department of Agriculture, under the limit fixed by law, to \$6,500. And \$6,500, I want to show you, as far as comparison with other bureaus is concerned, is very moderate and, in comparison with the universities of this country, is too low. It is only because if we get the right kind of scientific organization we can offer bigger opportunity to these men that we are able to draw men to the Department of Agriculture. Men in scientific lines do not work entirely for money; they work for opportunity, and we must make opportunity for them.

SALARIES PAID SCIENTIFIC EMPLOYEES BY WAR, NAVY, AND OTHER GOVERNMENT AGENCIES, ETC.

To answer the statement, first, that the Department of Agriculture is paying higher salaries—and when I make this comparison, you understand, I am not making it in a spirit of criticism at all, but simply as a comparison, so that you can understand the situation—I undertook to get a statement of salaries paid by the War and Navy Departments, which includes, of course, the Surgeon General's Office, the Coast and Geodetic Survey, and a great many of those groups of strictly scientific men. Of the Army men, Gen. Pershing draws \$21,000 a year. Of course, that is a special provision. A general in the Army or an admiral in the Navy gets \$13,500 salary, and then he has what we call perquisites, which vary with the different zones in which they are stationed—some are standard and some vary.

Light and heat vary; quarters are the same everywhere. Figured on the basis of residence in Washington, a general in the Army gets \$15,508 total allowance; a major general of the Army and marines and a rear admiral of the Navy, upper half—and there are nine of those places—get \$8,000 salary, and \$9,672 is the total. A brigadier general, or the chief of a bureau, or a rear admiral of the Navy, or the Surgeon General, the men in that work—and there are more than nine of them; I do not know just how many—they get \$6,000 salary, and, all together, they get \$7,490.

Mr. ANDERSON. That does not include longevity pay?

Mr. BALL. No; this is just the basic pay in the figures I am giving. I am giving them for the end of the first five years. I take it that for the first five years the scientist in the Department of Agriculture would not have gotten his stride yet, so in the figures following I am giving you not the initial pay but the pay at the end of five years, which would be the time when the man was getting to be efficient. The colonel in the Army or marines, captain in the Navy, Assistant Surgeon General, or hydrographic and geodetic engineer, after the first five years, get \$6,330. The lieutenant colonel of the Army and

nes, commander in the Navy, senior surgeon, and hydrographic geodetic engineer of the same rank, after the first five years, get \$6,120. The major of the Army and marines, lieutenant commander in the Navy, surgeon, and the hydrographic and geodetic engineer of equal rank, after the first five years, get \$5,120.

The captain of the Army and marines, lieutenant in the Navy, assistant surgeon, and the hydrographic and geodetic engineer of equal rank, after the first five years, get \$4,165. The first lieutenant of the Army and marines, lieutenant (junior grade) of the Navy, assistant surgeons, and the hydrographic and geodetic engineer of equal rank, after the first five years, get \$3,427. I want to call your attention to that figure particularly, because that is about the average of our leaders of the great projects of the Department of Agriculture. The average salary they are getting now is \$3,481.

This means a first lieutenant in the Army and marines gets as much as the average salary of one of our leaders; the lieutenant in the Army ranks with the men handling the big work of the Department of Agriculture.

Mr. RUBEN. How many lieutenants are there?

Mr. BALL. I could not tell you, sir. I did not dare inquire, because they might think I was hunting for information to be used against me.

Now, taking the other officers: The Railroad Administration, which has gone, paid \$25,000 to 17 men. It paid from \$35,000 to \$50,000 to other men during the administration of the railroads, and employed 20 men in that line of pay at that time.

The judicial branch of our Government has 8 Supreme Court Justices at \$14,500; 33 circuit court judges at \$8,500; 97 district judges at \$7,500—making 139 in the judicial branch of the Government receiving \$7,500 or above.

Five thousand is the highest salary in the Department of Agriculture and there is only one of those. Five thousand is the next highest and there are nine of those, and forty-five hundred is the limit for any scientific man in the Department of Agriculture.

Mr. ANDERSON. How many are there at \$4,500 now?

Mr. BALL. I could not give you the exact number, but there are 7-odd.

Mr. ANDERSON. I thought it was about 45, according to the figures given the other day.

Mr. BALL. That is about it. In the Treasury Department—I won't list all the names—there are 94 men here that run from ten to twelve thousand dollars: a Commissioner of Internal Revenue, Assistant Commissioner of Internal Revenue; prohibition commissioner; assistant-prohibition commissioner and three division heads; 50 collectors of internal revenue from five to six thousand dollars; 24 collectors at \$10,000; Director of War Risk at \$12,000; Assistant Director of War Risk at \$10,000; two assistant directors—there are 94 men enumerated that receive from five thousand and running up to ten and twelve thousand in the Treasury Department. The national bank examiners receive from \$6,500 to \$15,000. I do not know the number, but I imagine there are something like 40 of those. And there are at least 130 people in the Treasury Department receiving higher salaries than any scientific man in the Department of Agriculture does.

The United States Shipping Board has four men, all of whom get \$10,000 except one, and he gets \$7,500.

The Interstate Commerce Commission has 9 men at \$7,000 to \$10,000—all of them above \$7,000 except one. There are 23 that get \$7,500—32 men in all above \$5,000.

The Federal Reserve Board has six men above \$5,000, and the least paid one gets \$6,000, and from that up to \$10,000.

The Federal Trade Commission has seven men at \$5,000 to \$8,000.

The Federal Vocational Education Board has three men at \$5,000 to \$6,000.

The Bureau of Efficiency has two men above \$5,000.

The Department of Justice has 16 men above \$5,000, all but 8 of them above \$7,500 and running up to \$10,000.

The Department of the Interior has 12 men receiving salaries from \$7,500 down to \$5,000.

The Department of State has one.

In all, I have figured 331, with the exception of the bank examiners, which, estimated at 40 of them, would make 371 men in other branches of the Government receiving \$5,000 or more against 10 men in the Department of Agriculture. I am not making this comparison in any spirit of criticism; I would not have you reduce the salaries of your justices or the men in the other branches of the Government; but, in order to handle the problems of the great basic industry of agriculture, we want justice to our workers also. If the Department of Agriculture is going to hold men it must compete with the great endowed universities of America—with Columbia, Yale, Harvard, Stanford, and Chicago. They have endowments for raises in salaries and are setting the salary scales I have here. For professors, administrative officers—not deans, but just professors and heads of departments—they have an average of 100 to 150 such men in each one of these institutions; Columbia University runs \$6,000 to \$10,000. That means the minimum and maximum of the ordinary grade. They run up to \$15,000 in exceptional cases.

Yale and Harvard, \$5,000 to \$8,000; Stanford, \$4,500 to \$7,500; Chicago—I did not get the maximum and minimum, but they give \$5,032 as the average salary of all of their professors, and they have one hundred and twenty-odd of them, and I know they run up to \$15,000 in one case. I have the salary scales for all the big State universities in this country—Wisconsin, Illinois, Ohio, Pennsylvania, Cornell. These salaries are more or less confidential, so that I would not like to quote them, but their salaries run away higher than the Department of Agriculture.

Mr. ANDERSON. Have you Cornell there?

Mr. BALL. Yes. Cornell, on the old scale, was from \$4,000 to \$5,000 for the heads of departments. They are expecting to raise their salaries still higher.

Mr. MAGEE. Those universities have been raising endowment funds and increasing salaries, have they not, in the last two or three years?

Mr. BALL. I have a clipping here of June 8, saying that \$6,248,000 has been raised to be used in increasing salaries in Cornell. I have the proposed scale for Cornell.

Mr. MAGEE. You mean the income from that is to be used in raising salaries?

Mr. BALL. Yes; the income from that will be used. And they propose to raise the minimum to \$4,500, so that the lowest-paid professor in Cornell University will receive the maximum salary of a scientific man in the Department of Agriculture, and the maximum will be \$5,500; and then they have special cases where the salary will be above that.

Mr. ANDERSON. I have a statement here, which you sent to me, containing a comparison in salaries of State-supported institutions secured by the United States Bureau of Education, which shows the average in 1915-1916 and the average for 1920-1921. This statement shows, for Cornell University, the average for the dean was \$5,625, and the average for the professor, \$4,100; assistant professor, \$2,638; and instructors, \$1,429. I do not know what they compare with in the Department of Agriculture, but they seem somewhat lower than you have indicated in your statement. And that is the highest one in the country, apparently.

Mr. BALL. Cornell?

Mr. ANDERSON. Yes.

Mr. BALL. Wisconsin is considerably higher. In Wisconsin the average is \$4,630 for professors. That is on the basis of last year, and much of the raises have come since that time. Ohio State University made a 32 per cent raise since those figures. Cornell University has made one raise, and many other institutions one, since then. And the average professor in Wisconsin gets \$5,210. And that is on the basis of a year's service; they pay on the basis of nine months' service, and pay extra for research men and teachers in the summer.

Mr. MAGEE. That is to meet a condition that grew out of the war?

Mr. BALL. That is to meet commercial competition.

Mr. MAGEE. That is at the inflated basis. If we get back to the prewar basis, why then it would mean a substantial increase in their salaries. I am a graduate of Harvard, myself, and I think the endowment fund we raised was eleven millions. They could not hold their professors, because men in ordinary employments were getting more than the professors in the institutions, and the alumni subscribed to raise this fund to increase the salaries, due to the fact that the purchasing power of the dollar had been greatly reduced. But if the purchasing power of the dollar comes back—I am not saying the professor will get too much, but what I mean to say is it would mean a permanent increase in their salaries, which they are justly entitled to.

Mr. BALL. And which we will have to meet.

Mr. MAGEE. If your deflation goes on and gets back to prewar days, back to normal conditions, then, of course, you have a different proposition. The war has convulsed everything and upset everything and put it on an abnormal basis. I am not saying those men should not have greater pay, but I do know we were called upon to subscribe there, and I presume it was the same way in these other educational institutions, for the reason the demand existing was caused by the inflation of everything and the greatly decreased purchasing power of a dollar.

Mr. BALL. Yes; but when an endowed institution like Harvard, Yale, Columbia, or Cornell raises this endowment and raises those

salaries through this endowment, which is a permanent endowment, those standards of salaries are going to stay, and we have to compete with them.

Mr. MAGEE. That is the point I make, that they probably will stay. But what I mean is these institutions, most of them, started some two years ago at the time, of course, when inflation was perhaps at its peak.

PAY OF COUNTY AGENTS BY STATES.

Mr. BALL. Just take to-day and let me show you what the farmers of America are paying. Let me tell you the average salary of our project leaders, men who spend more money than most of the experiment stations of the States—each individual man, I mean. Their average salary in the Department of Agriculture is \$3,481. The farmers of Illinois are paying an average of \$3,751 to their county agents—\$300 more to a county agent—and he is the end man in the chain—than the fountain from which they are supposed to receive their advice.

Mr. RUBEN. And the man supposed to be giving them advice is getting \$3,481?

Mr. BALL. Look at this map and look at Illinois and look at these big dots here [indicating] and you will see what they are paying their county agents. Illinois pays her county agents the highest salary. Every county agent in the 12 leading States here receives a salary running from \$3,751 average for Illinois down to \$2,059 for Kansas. And the average of our research workers in the Department of Agriculture is \$2,184, with the bonus. Every county agent—that is, the average county agent—in all of those States but one is getting more than the average research worker in the Department of Agriculture; and the farmers are paying that, mind you.

Now we are reaching a condition which we have never had before in which the farmers are recognizing the value of putting money into men. That has been the stumbling block for many years with farmers' organizations, that they were not willing to pay big salaries. Now the American Fruit Growers' Association have our former Chief of the Bureau of Markets, and they are paying him \$20,000.

Mr. MAGEE. You could not pay that, anyhow.

Mr. BALL. He would come back here for \$8,000.

Mr. MAGEE. Do you think he would leave a salary of \$20,000 to come back here for \$8,000?

Mr. BALL. Yes, sir. We have men down there now refusing—

Mr. MAGEE. Then there is not much force in your argument. If he would come back for \$8,000 when he is getting \$20,000, I would suggest he ought to have his head examined.

Mr. BALL. No; there are certain advantages in Government work which men recognize; but you must not capitalize that too much.

Mr. MAGEE. I appreciate that; but a man who will leave the Government employ to take a position where he is getting \$20,000 on the outside, I do not believe would come back for \$8,000.

Mr. BALL. I believe he would. I am sure he would come back for \$10,000, because if he could get hold of this great Government organization, it would be a great influence; only he must have salary enough to keep his wife looking decent on the street.

Mr. MAGEE. That is just the point I make. If your argument here applies to normal conditions, that is one proposition; and while I think we are more normal now than a year ago, yet we are a great ways from normal yet. If we can get back to normal——

Mr. BALL. You will never get back to it in scientific salaries.

Mr. MAGEE. I presume the present conditions won't exist forever.

Mr. BALL. You will never get back to it, because the commerce of this country, the farmers and business industries, have realized, as never before, the value of scientific men. Nineteen States are paying their highway engineers from \$6,000 to \$10,000, with an average of \$7,740. The average of 40 States is \$6,142—higher than any man in the Department of Agriculture. The Illinois Farm Bureau Association pays one agricultural expert \$15,000 and another one \$10,000. This association is made up entirely of farmers—showing that the American farmer is realizing the value of scientific workers.

Mr. MAGEE. Is this great difficulty something that has covered a long period of years, or is the condition which you have described something of recent growth?

Mr. BALL. Something of recent growth.

Mr. MAGEE. And that is due to the inflation of everything. They do not get money enough to provide for their families and educate them; that is probably true, but as far as that particular proposition is concerned, they are not suffering any more than the great body of our people. Our people, generally, practically 105,000,000 of them, have found the greatest difficulty in getting enough money to provide for their families and to educate their children. Of course, that is because of the fact the dollar doesn't buy anything. It seems to me one of the most necessary things to lay is for the Government at least to attempt to take such action as will increase the purchasing power of a dollar, and it seems to me the main remedy is along those lines. I do not mean to say by that that our scientific men are getting all the pay they ought to have; their salaries probably are not high enough, but what I mean to say is that under the conditions, I think, are bound gradually to improve.

Mr. BALL. I think the conditions are going to improve, and if these men in the department did not believe that, you would not have any body left.

Mr. MAGEE. Not only that, but I do not think that the inducements which you have described there from outside sources will be so inviting in the future.

Mr. BALL. In all of the slumps that have been going on, I have only heard of one company, and they failed, that has either turned off or reduced the salary of its scientific men. They are cutting the salaries of the other men, but they recognize the competition of the future is going to be a competition based on a great deal more scientific research than they have had in the past. And right now, with the slump already here, they are coming in and offering our men salaries two or three times what they are getting. They are continuing to do so. That is what we are up against, what we are facing, and I feel sure if we have to go back to the people in the Department of Agriculture and ask them there is no hope of a raise in the maximum allowed at the present session of Congress——

Mr. MAGEE. You may as well go back and tell them that, because this committee has no power, and I do not think there is any show on earth of getting an increase in salaries in your department on an appropriation bill. That is my opinion. If there is such a condition as you describe, then you should take your complaint to the legislative Committee on Agriculture; that is the place to take it. They are the ones that have the authority to consider it. But that is up to the department and not up to us. In other words, you can not very well shift your responsibility to the Appropriations Committee, which has not the power to legislate to increase your salaries.

Mr. BALL. Of course, this is a new condition which we are facing, we understand; but it has always been done in the budget bill. Every raise that has been made has been made in the budget bill.

Mr. MAGEE. You understand the rules of the House have been amended and the powers of several other committees are taken away and concentrated in the Committee on Appropriations; and they have all served notice, so far as I understand, that the Committee on Appropriations must not attempt to legislate.

Mr. BALL. Of course, that is an interpretation of legislation. You can not raise a single appropriation——

Mr. MAGEE. It is not an interpretation; it is a fact.

Mr. BALL. As far as I am concerned, the argument holds. There is, however, a question in my mind as to what will happen unless we do this thing. I am not pleading for those scientific men in the Department of Agriculture; I am not pleading at all for them; I am pleading for the United States. The scientific men will be better off financially if we do not raise their salaries, because they will go out into university or commercial positions at large advances.

Mr. MAGEE. You know that every department that has come before a committee of which I have been a member has made the same request and with a good deal of the force with which you have made it; and each department has made the plea it could not continue unless salaries were increased. So the Department of Agriculture does not stand alone among the Government departments in that respect: you have a great deal of company.

Dr. BALL. But a very large part of that plea by the other departments has been for the clerical workers, while I am talking for the scientific research force.

Mr. MAGEE. You can not get scientific men in the Public Health Service for the salaries they are paying to-day and probably the committee thinks a great deal of their request. But Congress appointed a commission for that purpose and they have made a report and Congress ought to take up that report and pass on it and make permanent salaries.

Mr. WASON. I understand, Doctor, from what Brother Magee says, that the only way to make legislation on this appropriation bill would be by a rule on the House from the Rules Committees. That is what we have to consider as well as legislation that should go to the regular Appropriations Committee, and the Appropriations Committee should make the appropriation for the purpose of having knowledge of what appropriations the Government is making. Heretofore there has been some confusion due to the idea that some committees should make appropriations as they formerly did, for the Agricultural Department, the Army and the Navy Departments, and all down the

line. There have been half a dozen committees that have had their hands in the appropriations for the Army and Navy Departments, and the idea is to avoid that and do away with the confusion.

Dr. BALL. What incentive is there for a young man to look forward to a career with the Agricultural Department, young men who go to college and fit themselves for this work; what incentive is there for them?

Mr. WASON. Personally, I sympathize with your line of argument. The two positions that you have been talking to the committee about, your two leaders, and from observation of the work of the department I think they are two men that are needed there, but whether it is advisable for this committee to go into it is a question this morning. I am impressed with your line of argument, but, like the court, I withhold judgment.

Dr. BALL. I want to mention that the bureau chiefs who direct the work of these men have a limit, and that limit is your statutory limit. We have no bureau chief except one over \$5,000, and there are only nine of these all told.

Mr. ANDERSON. That is subject to a point of order, if anyone wants to make it.

Dr. BALL. It would seem to me very peculiar if we had to put a bill through Congress for every individual salary; it ought to be within the power of this committee to consider and pass on it.

Mr. MAGEE. There is a proper committee, and that is the point; you should take your case to the committee that has the power. I do not think it fair to ask the committee that has only power for appropriations to do something it has not the power to do at all. There is no chance at all of having it go through this committee without a point of order being raised on the floor of the House.

Mr. RUBEY. The same rule has applied in the past when the committee had the authority to legislate; there was always the rule that a point of order was good.

Dr. BALL. But many of these did go through.

Mr. RUBEY. Yes; but owing to the fact that when the matter was presented to the House opposition was withdrawn. I am very glad, indeed, to see your statement go into the record so that we will have this source of information for the Members of the House.

Mr. MAGEE. The only point I make is that if this committee should attempt what you suggest, there would not be any chance of success. The only way you can get what you desire is to go to the committee that has authority to do it.

Dr. BALL. It seems to me to be almost imperative that some recommendation for advancement be made in view of the long and very valuable services of some of the bureau chiefs, and I again call your attention to the fact that the raising of one or two of these men will entirely change the outlook of the situation to the young men and give them renewed confidence of the possibility of some opportunity in the Government service. We have men like Dr. Mohler, of the Bureau of Animal Industry; Dr. Taylor, of the Bureau of Plant Industry; and Prof. MacDonald, of the Bureau of Roads, who are men of outstanding ability that can not be replaced, and every effort should be made by you to take care of such men.

Mr. MAGEE. So far as I am concerned I am not going to take the responsibility of it. If such conditions seem to me to be

duty of the Department of Agriculture to go to the proper committee. You will not get anywhere by making an appeal to a committee that has no authority in the matter.

Dr. BALL. This is a new situation that has come up; we did not know this.

Mr. MAGEE. The rule has only recently been amended.

Dr. BALL. We have been guided by the past, and I beg your pardon.

Mr. MAGEE. That is not necessary at all, but it seems to me you should know what the facts are and go to the committee where you can get relief.

Dr. BALL. Even if we should be able to get a bill through this other committee, it would have to come back to you for the appropriation.

Mr. ANDERSON. It would be automatic; if the salary was authorized, it would be up to this committee to provide for the salary, otherwise there would not be any question about it. If the salary was authorized by the other committee, we would not have anything to do but provide the moneys authorized.

Mr. RUBEY. That would be a long-drawn-out matter.

Mr. ANDERSON. Is there anything further, Dr. Ball?

Dr. BALL. Nothing further that I have.

Mr. ANDERSON. Is Mr. Silver present?

Mr. KILE. Mr. Silver and also Mr. Howard were to be here this morning, but were called before another committee and, therefore, could not be present and wanted me to make a few remarks.

Mr. ANDERSON. Very well, we will hear you, Mr. Kile.

STATEMENT OF MR. O. M. KILE, AMERICAN FARM BUREAU FEDERATION.

Mr. KILE. Of course, Mr. Howard and Mr. Silver are extremely interested in this subject and have been following it very closely from day to day, and I believe I am safe in saying that the interest on the part of the farmer in the affairs of the Department of Agriculture is very much greater to-day than ever before. It is due partly to the fact that the farmer is realizing the good work done by the Department of Agriculture from year to year and also in part to the fact that the farmer is beginning to go into organizations and has noticed the results of scientific work in a way he has never gotten it before. So that to-day we are considerably more interested in the matter and want to work with you in every way possible to correct some of the conditions that exist.

We feel very badly over the fact that the men can not be kept at the Department of Agriculture; good men are having to leave it right along, and we feel that it certainly reflects upon the Government. The way we look at it is this: In the first place, we hear a good deal of talk from time to time about the amount of money spent in the Department of Agriculture; some people make comparisons which seem to reflect that the farmers are getting an undue part of the Government's expenditures. We went to considerable trouble to analyze this and came to approximately the same conclusion as did Dr. Ball. After you have taken out the amounts not chargeable to the farmers themselves, but which benefit all the people equally, such as enforcement of the food and drugs acts, meat inspection, control

and police duty, acquisition and maintenance of national forests, the Weather Bureau, and other work of various kinds, even including the permanent annual appropriation of some \$11,000,000, it comes down to around \$20,000,000 that goes into this fund for the actual development of agriculture. Now, \$20,000,000 spent in the development of a business that represents \$80,000,000,000 of capital is mighty small—one-fortieth of 1 per cent. There are plenty of businesses that spend ten times that much in developing their scientific work.

Now, I want to make this point: That it is practically out of the question for the individual farmer to go ahead and do much of this work. The point is brought up that the farmer groups should do some of this work. But that is out of the question, because there is at present no association which could carry on this work, and also, as Dr. Ball brought out, the individual or scattered group can not do it, since their costly improvements would immediately be used by their competitors. So that it has to be done by public funds in order to be done economically and efficiently.

I will not say anything about whether this expenditure is worth while, as I think that has been brought to your attention in a dozen different ways. For instance, the one appropriation of \$250,000 used several years ago to introduce and establish durum wheat now produces in this country \$50,000,000 every year. Take the instance of the introduction of tropical fruits into this country, which brings us hundreds of millions of dollars every year that normally would go to other countries; the raising of rice in California, and other instances which return each year more than the whole Department of Agriculture costs. So if we work from the standpoint of whether it is worth while, there is no argument to it. You are getting back \$100 for every dollar going into it.

But, of course, you are up against the proposition of having to economize, and I certainly sympathize with this committee, because the line between your duty to the taxpayer and your duty to the farmer is no broad line. You have your troubles there. The temper all through Congress seems to be reduce, reduce, cut to a minimum this year. I have some tables here from the United States Bureau of Efficiency, which, if you will note, shows that the Government estimates for 1922 make a total of \$1,794,000,000 to be expended for past wars, while the estimate for the Military Establishment alone is \$852,000,000, and the Navy \$695,000,000. In other words, the total asked for on account of past wars and present defense is \$3,342,000,000. Last year the actual expenditures for this purpose were 88 per cent of all the moneys spent by the Government.

Mr. ANDERSON. Of course, that may be wrong. If you are going to maintain an Army, you have a certain amount of expense you can not avoid, and the same thing is true of the Navy. That is a fixed expense and can be reduced only to a certain minimum, as is true also of the appropriation for the Department of Agriculture—you have to maintain the service; but when you go beyond that point you get directly into the question of whether the appropriation as such should exist or if conditions justify you in making it a new proposition in face of the conditions.

Mr. KILE. That is to be taken into consideration; but the point I am trying to get at is this: That, taking that into consideration, it

would seem on the face of it as though we were putting too much into nonproductive activities, and when we come to productive affairs—that is, for every other purpose connected with Government affairs—we only spend 12 per cent. I want to make the point that it is scarcely worth while to try to save money out of the Department of Agriculture, for if you did away with the whole business you would only save 1.3 per cent of your total estimates. Part of that is a stated annual appropriation, and if you cut out the remaining part, which might be considered as going directly to the Department of Agriculture, that would only reduce the total Government appropriation by something less than one-half of 1 per cent. So that, looking at it from a broad viewpoint, the amount of money it is possible to save by cutting in on the Department of Agriculture is so small that it seems that the people who are trying to apportion the expenses of the Government should look elsewhere for any big reduction. And we are very much of the opinion that this reduction should come, or rather should be made to come, from the Military and Naval Establishments. I believe a great many sympathize with that idea, and we hope that something can be done along that line.

Now, just a word about this matter of salaries. I had prepared figures and gotten some matter together which shows a comparison with other groups of the Government. My figures on this as regards comparisons with the Army and Navy seem to be identical with those submitted by Dr. Ball, and need not be repeated. I will cite a definite instance, however, which proves the higher scales in the Navy. I will say that this comparison was brought about by the transfer of the personnel of the Coast and Geodetic Survey recently to the Navy Department.

These men, mostly engineers—at least, quite a large number of them were engineers—had their salaries increased by the mere fact of being transferred, some of them as much as 180 per cent, and the average increase was 80 per cent. This shows a considerable difference between the scales in the Military Establishment and some of the civil establishments.

I can only emphasize the statements that have already been made about conditions in the Department of Agriculture in regard to salaries, and add this point—that it is not a condition that has existed only to-day, but has existed for some time back. I was formerly connected with a commercial concern, doing strictly agricultural work, and having received the same sort of training as the men in the Department of Agriculture, and for all our men in that concern the salaries averaged from 75 to 100 per cent higher than we could have gotten in the Department of Agriculture. None of us would have thought of going to the Department of Agriculture.

The farmer has taken a somewhat different view of this matter of salaries in recent years, as I believe Dr. Ball has mentioned. Take the Farm Bureau Federation, for instance. Our president receives \$15,000, and we have a number of salaries that run \$12,000 and \$10,000 a year for heads of departments. We take a man out of the Department of Agriculture and pay him almost twice as much as he gets from that department.

Mr. MAGEE. Does that affect your conscience any?

Mr. KILE. It does sometimes, because we hate to be in competition with the department. We feel that we have almost as much interest

in the department as in the federation. Right now we are interested in the question of marketing and have to depend upon the Department of Agriculture for market information, both here and in foreign countries, and that is one reason why we are especially interested at this time, more so than in any previous year. We have taken the position that the farming industry is just as important as any other and the men who are at the head of that work, helping to develop it, must compare favorably with those in any other industry. Since the farmer himself has gone on record as favoring these things, he pretty strongly suggests that the Department of Agriculture, which works right with the farmer, needs recognition and should be placed on somewhat the same basis.

I was very much interested in the discussion as to the limitations of this committee. We feel that you are sympathetically with us; we have talked with various individuals and noted your remarks, and feel that you are in thorough sympathy with us. You have mentioned certain limitations. Now, the federation wants to work with you in any way we can to correct this; and, as Dr. Ball has pointed out, the possibility of getting action at this session comes down to this committee. Let me see if I understand this clearly: This appropriation calls for \$7,500 for the heads of departments. Do I understand that your statutory limit is \$5,000, and that it would be impossible for you to recommend this \$7,500 without it being subject to a point of order, which perhaps might knock it out?

Mr. ANDERSON. That is correct, except that there is no "perhaps" about it. If we should recommend an appropriation in excess of the statutory limit, if any man on the floor of the House objected, it would go out.

Mr. KILE. Do you consider it possible to take this to another committee in the limited time available, as I understand it, this must be acted upon in the next 10 days; is the bill liable to be reported out in that time?

Mr. ANDERSON. I should say in the next 10 days.

Mr. KILE. It would scarcely be possible, then, would it, to get any action under way in that time which would overcome the limitation?

Mr. ANDERSON. It is barely possible that if the House Committee on Agriculture authorized carrying the increase that it might be done. However, I would not be certain.

Mr. MAGEE. The probability is that they—the employees in the Department of Agriculture—would have to be paid and bring in a deficiency to meet the difference. If increased salaries were authorized by the proper committee and fixed by Congress, I think that if no moneys had previously been appropriated the excess would be met by a deficiency appropriation.

I think that is being done now in the case of increase in salaries for both Army and Navy officers. I think it is being considered now; I think that matter has been taken up.

Mr. KILE. That is with another committee?

Mr. MAGEE. Their salaries were increased and I understand they are now being met by a deficiency appropriation. The increased salaries were paid from the time they became effective.

During the last session, a deficiency appropriation was made for the time they became effective.

Mr. KILE. It would certainly help this proposition, help bring it before the House in the proper light, if this committee would go as far as it can and even further than they think they might go, and recommend this proposition, taking the chance that it would be ruled out on a point of order.

Mr. WASON. It is no chance at all; we have knowledge that some men on the floor intend to do it; there is no chance except what God Almighty might give it.

Mr. KILE. But a bill reported out would certainly stand as having had your recommendation, and that in itself would perhaps help materially.

Mr. MAGEE. We have to take an oath of office to perform our duties. Now, do you think under that oath you would want to report out an appropriation of money which you knew you did not have the slightest right to report out? You can answer that "yes" or "no."

Mr. RUBEX. If we violated the conditions of our oath of office every time we reported out a proposition subject to a point of order. I do not think that there is a Member of Congress who has not done so.

Mr. MAGEE. That is not the question at all. He has asked us to do something that we have not the authority to do and I simply asked him what he would do under like circumstances.

Mr. KILE. There is no rule to keep you from doing it.

Mr. MAGEE. That is not an answer to my question at all. I told you that we had taken an oath of office to perform our duties and asked you whether under that oath you would report out an appropriation of money which you knew you did not have the slightest right to report out; that was my question.

Mr. KILE. Under the circumstances I would.

Mr. RUBEX. We reported out the sundry civil bill the other day with a provision in it which called for a point of order.

Mr. MAGEE. I did not say that; I simply put the fact up to him if he were in our shoes what he would do.

Mr. KILE. You have a right to report it out because your oath did not exclude you in any way from making such a report.

Mr. MAGEE. I will tell you what your position is, in my judgment. You are like the professor in one of our great universities who wrote me the other day and said "I am for rigid economy for public expenditure, but here is an object which I think the Government should be liberal in when making an appropriation." I wrote him back that many good citizens, perfectly good citizens, are in favor of rigid economy in public expenditures except for the object for which he or she wants an appropriation. They want a liberal appropriation for their own proposition but want the other fellow cut off and reduced. Now, you want the Army and Navy appropriations reduced but want a liberal appropriation for the Department of Agriculture. I am making no complaint so far as you are concerned but your position is to get what you want and to the devil with the other fellow.

Mr. KILE. I believe I stated we were in sympathy with——

Mr. MAGEE (interposing). Yes; you are in sympathy but if you can get what you want, why to the devil with the other fellow. Your position is the position of every good citizen who comes before a

committee of which I am a member, to get what he wants and to the devil with the other fellow. He is for economy toward the other fellow but wants liberality for himself. Now, what are the members of the committee to do? Are they going to make fish of one and flesh of another, or are they going to do it equitably.

Mr. ANDERSON. We are not going to do justice by doing injustice to everybody instead of just a few.

Mr. MAGEE. That may be your view and if you want to make exceptions you are at liberty to do so. I speak for myself. You seemed to want to know how the members of this committee felt and so far as I am concerned I am not going to vote for the appropriation which we have not the authority to report out. If you have any complaint, I say that it is your duty and responsibility to go to the committee which has the power, and that is a duty and responsibility which you can not shift to a committee that has no authority.

Mr. RUBEY. I am a good deal like the old judge who was willing to take the matter under advisement but was in favor of the plaintiff.

Mr. MAGEE. I am going to do what I consider my duty.

Mr. KILE. My arguments have attempted to show that the appropriations, generally speaking, and those of the Department of Agriculture should be placed in different categories.

Mr. MAGEE. Do you want to know what the members of the committee feel about it or do you want them to jolly you and give you some soft soap and molasses. I say exactly what the law is and what authority they have. Perhaps that is due to the fact that I am not a politician but a lawyer and when a man comes to me with a proposition I tell him exactly what the facts are.

Mr. KILE. You have your own personal preference and do as you please, naturally, on that.

Mr. MAGEE. I would not say preference.

Mr. KILE. Is there anything in the oath you have taken, or in your duties as you see them that would prevent you.

Mr. MAGEE. I do not suppose that there is anything that would prevent any ordinary individual from making an assinine fool of himself. I do not suppose there is anything that prevents that if he insists on doing it.

Mr. KILE. I do not know that there is anything further to be brought out in this connection, but we do feel that the appropriation was cut to the bone last year—to the point where it very seriously interfered with the efficiency of the department, and by so doing you reduce the wealth-producing power of the Nation, which is certainly a first consideration. National defense is a major consideration, there is no question about that, but we do question, however, whether it is wise to reduce our producing power merely to increase or put at an unusual level the defense power. We have got to have something to defend or it is not worth while having an Army or a Navy.

There is just one other point I would like to mention. We all hear a great deal about the necessity for reducing expenses—that we are mighty poor and have to reduce on appropriations. The Secretary of the Treasury has had a great deal to say about that. We can not quite agree with the Secretary of the Treasury and others in the view that we are so extremely poor that we must exercise ruthless economy. It is true that we owe a lot of money, but since we owe it to ourselves

it does not seem such a serious matter to us and I do not—I am speaking for our organization because we have discussed the matter and Mr. Silver and Mr. Howard expected to present the matter—feel that we are justified in cutting expenditures to the point where our productive powers will be impaired.

Mr. MAGEE. A great many good citizens have stated that the country was governed all right, but the people spoke with a good deal of certainty on the 2d day of November. I do not know that it convinced anybody or that the convictions made were erroneous, but everybody that I know is trying to reduce taxation, excess-profit taxes, etc.; but all that is immaterial. Nobody is raising the question that the salaries of these learned men are sufficient. Every learned man, as suggested by Dr. Ball, every reasonable man knows the advantage of keeping them in the service of the Government, but you are putting up to the committee something which they have not the power to do, no power at all, and I would suggest that you go to the committee that has the power and present your proposition to that committee. Is that not fair?

Mr. KILE. Yes, sir; it is, and I appreciate it; that is, your suggestion. I only point out that your favorable recommendations on this would have a very material effect upon that committee.

Mr. MAGEE. You simply ask us to do something like setting ourselves up as a man of straw that would be knocked over on the floor of the House. I would not be made a man of straw to be knocked over. If you want to put yourself up as a man of straw to be knocked over you are at liberty to do so.

Mr. KILE. I believe, Mr. Chairman, we have no further points to be brought out except a lot of data which you have already heard in other forms. But we do want to work with you in any way we can and feel that we ought to by all means get together in such a way that the department can be adequately supported, and if you have any suggestions to make along that line we should be glad to have them.

FRIDAY, JANUARY 7, 1921.

FOR ACQUISITION OF LANDS AT HEADWATERS OF NAVIGABLE STREAMS.

Mr. ANDERSON. The committee will take up the supplemental estimate of \$10,000,000 for the acquisition of additional lands at the headwaters of navigable streams under the Weeks law.

Col. GREELEY. I am going to ask Mr. Sherman, the Associate Forester, to take charge of this hearing, as he is more familiar with it.

Mr. SHERMAN. I would like to have the committee hear first Representative W. C. Hawley, of Oregon, who is a member of the commission.

STATEMENT OF HON. W. C. HAWLEY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OREGON.

Mr. HAWLEY. Mr. Chairman and gentlemen: On the adoption of the law known as the Weeks law the Speaker appointed as members from the House Representative Gordon Lee, of Georgia, and myself.

We have served continuously on the commission since its inception. I have practically participated in every meeting and every purchase that the commission has made.

The act authorizes the purchase of land for the protection of the navigability of navigable streams. It authorized an appropriation of \$11,000,000 and the first appropriation made was \$1,000,000. But the bill passed so late that the \$1,000,000 was not used and of the next \$2,000,000 only a part was used. We could not wisely expend the money under the information we then had.

Mr. ANDERSON. As I understand it, \$1,000,000 became available under this act in 1913 and \$2,000,000 was appropriated thereafter.

Mr. HAWLEY. Before the commission could organize and have the examinations made in the field that were necessary for our information before we could make purchases, the \$3,000,000 had practically lapsed. That was replaced later on by additional appropriations, and \$600,000 was appropriated in a recent bill, so that the total amount appropriated for the purpose of making purchases, and a part of which is now available, has been \$11,600,000.

The commission consists of the Secretaries of War, Interior, and Agriculture, two members of the Senate and two members of the House. The commission has no salary list either for itself or for any of its employees. We use, as provided in the act, the Geological Survey for the determination of the areas in which the lands for the protection of the navigability of navigable streams should be selected, and upon that information we have established certain purchase areas in the White Mountains and in the Appalachian Mountains. Then we use the Forest Service for making physical examinations of the land, of the water flow, the character of the growths, the merchantable timber and the stuff which will grow into merchantable quality. They also get information for us as to the price to be paid by making inquiries as to sales within that locality within recent periods; the rates at which lands are assessed for the purpose of State and local taxation, and if timber sales, outside of the sales of land and timber together, are made, what the timber sales have been and the prices received for the timber so sold. We have never asked the Geological Survey, and never will, to change its recommendation on the areas to be established, because that is a scientific matter, and after they have determined what lands were necessary to protect the navigability of the streams drained by them we assume that to be the established fact.

Mr. ANDERSON. How many acres are included in this survey?

Mr. HAWLEY. There are included in the total purchase areas about 8,000,000 acres.

Mr. ANDERSON. How many acres have already been purchased?

Mr. HAWLEY. We have had surveyed and prepared for purchase about 1,800,000 acres. Of these, we have purchased or contracted to purchase 1,424,000 acres, speaking in round numbers. There are always areas that have been surveyed which will not be purchased finally by reason of the lack of agreement between ourselves and the sellers, all of this land being privately owned land. So the Forest Service always has a considerable area surveyed and prepared for recommendation, anticipating purchases by the commission.

We have paid for the lands purchased, on the average, \$5.21 an acre. This last year, 1920, we purchased a little over 101,000 acres,

and we paid, on the average, \$4.44 an acre, or 77 cents less than the average of all the period.

In the making of the surveys, upon my own motion—coming from a public-land State—we determined that there should be horizontal surveys. The lands in the South had been sold upon the up-and-down principle, following the contour of the ground, but we decided that the purchase should be made on horizontal surveys. That has decreased the acreage as offered by the sellers, but has given us actual areas for every dollar we have expended.

After we have established a purchase area and the Forest Service has made an examination of the lands and prepared its report—and all these reports are in writing—they become a part of the permanent records of the commission and can be referred to at any time by any citizen who desires to ascertain the facts regarding any purchase. The Forest Service enters into tentative agreements, under our authorization, with the sellers for the sale of their lands by taking options upon them. Then these options are presented to us at stated intervals for our consideration.

If you will observe this map, opposite page 27, you will see that in that purchase area we have approximately purchased half of the area. The question might be asked, Why did we not consolidate the purchases as we went along, or why did we not complete the purchases on any given area before we purchased in another area? The answer to that is a very simple one, and I think has already been anticipated by the committee. When we began the work we ascertained that enterprising individuals had taken options on lands that we would likely purchase and were holding them at a profit to themselves. We decided that we would purchase only from the owners of the lands at the time the act was passed or some time before, so that anyone taking an option with the intention of making a profit as an agent at the expense of the Government was not allowed to do so.

In order to prevent another thing that would have happened if we bought hurriedly in a given area or bought in one area until we had completed, we established a purchase area and within reasonable limits in that purchase area proceeded to buy the lands that were offered, and by excluding certain tracts that were offered at unreasonable prices we left spaces between the areas we purchased. The purchasers who thus tried to obtain from the Government more than their land was worth by asking too high prices lost the sale: we gradually surrounded their lands with the Government-owned lands, and we have been able to acquire considerable portions of those lands since that time. I remember in one instance—I will not state in which area it was—a very strong pressure was brought to bear on the commission to purchase lands at the prices offered. I was sent by the commission to confer with a body of men interested in having purchases made in the area, acting as a matter of public policy and not because financially interested, and I told those gentlemen—and they were very important gentlemen, both in State offices and in private life—that as one member of the commission I would never agree to pay any more for any piece of land than it seemed to be reasonably worth in comparison with other lands in that vicinity: that the thing for them to do, if they desired these lands purchased

and added to the areas for forest purposes, was to go to the sellers and induce them to take a reasonable price. As a result of that policy we acquired those lands for 30 per cent less than they were offered originally, as I remember.

We are asking at this time an authorization of \$10,000,000, to be available until expended, or that a part be available each year for a period of five years.

Mr. ANDERSON. I want to ask you about that. I do not think the estimate is clear on that particular phase of the proposition.

Mr. HAWLEY. I understand that the estimate asks that the amount be available until expended. Our theory was, as I remember the discussions in the commission, that it would probably cover a period of some five years.

Mr. ANDERSON. Is there any reason for tying up \$10,000,000 for the next five, six, seven, or eight years?

Mr. HAWLEY. Only for this reason: I understand this to be a national policy adopted by the Government, and the commission ought to have funds not only for this year's purchases but for the purpose of making surveys and examinations of lands for next year's purchases, and opportunity to have continuous surveys made and to purchase lands advantageously to the Government, which we can not do if the work is not continuously carried on. Also, the men in the Forest Service engaged in making the examination work would be without occupation; we would have to lay them off for a time, and if it is a continuing policy they ought to be continuously at work in order to take advantage of conditions of purchase as they develop.

Mr. ANDERSON. That is very true, but in order to keep them continuously at work it is not necessary to appropriate \$10,000,000 and keep it tied up for the next six or eight years.

Mr. HAWLEY. If the committee feels it ought not to appropriate \$10,000,000 and make it available until expended, you might authorize \$10,000,000 and make \$2,000,000 available, so that we would have some certain plan upon which to base our operations, but I earnestly commend to your consideration the plan submitted by the commission and in the estimate.

The necessity for the additional appropriation, outside of its being a national policy, I think is demonstrable by the good work that has already been done. We have secured some very valuable lands; they are worth a great deal more now, and if the Government wanted to sell out it could make a very considerable profit on its holdings, because they are worth a great deal more than was paid for them. Just now the lumber market is bad, and as shown by the purchases of last year, the next few years, in all probability, will be the best time in which to buy considerable areas. Companies which have completed their cuttings desire to get rid of the lands after they are cut over in order to use the money for other purposes, and will make the Government attractive prices. Continuing that policy and with the sum of money suggested, we can acquire very considerable areas, I think, at very attractive prices. The Government will obtain lands for less if it is the first rather than a subsequent purchase, as a general rule.

You will notice on the map to which I have called your attention that there are large areas included within the exterior boundaries

of our purchases. If these interior holdings are not acquired, there is a burden on the Government to protect them in order to protect our adjoining lands.

Mr. ANDERSON. You mean from fire loss?

Mr. HAWLEY. From fire and from depredation, and any other kind of loss. It will be the policy of the commission, if the appropriations are continued, to fill in these purchase areas within the exterior boundaries of our present holdings just as far as we can without allowing any seller to hold the Government for a higher price than the land is reasonably worth.

There is one new purchase area that we have in mind that is on a very important watershed and which, I think, would come well within the purview of the law. There are some portions of the areas already established outside of the boundaries of the present purchases that are quite important for the purposes of the law and ought to be acquired, and I think I state clearly the idea of the commission—and, by the way, Mr. Lee and myself were designated to appear in their behalf—when I say that it is our intention to consolidate the Government's holdings just as fast as we can, but we reserve the right at any time to reject the purchase of any interior or other holding if the seller shows an attempt to exact an undue price from the Government. In order to obtain some of the lands which persons were unwilling to sell for a reasonable price, and which were necessary for our purposes, we obtained an amendment to the law giving us the right to use the power of eminent domain. We have not used that in an aggressive manner to any extent, but we have used it in order to effect purchases where the title was bad. In the South in many places, in fact, practically all over the purchase areas in that section they have informal agreements for the transfer of lands, sometimes by word of mouth and by the memory of persons living as to who the owner of the land is, and nearly every title, the solicitor tells us, is faulty to some extent. So we agree with the purchaser upon the price and then institute a friendly suit in court and have a sale ordered, and in that way the Government acquires the title without defect. We have not acquired any land upon which there is a cloud in any respect upon the title thereto.

Mr. ANDERSON. Is there any sum now remaining to the credit of the commission?

Mr. HAWLEY. There is a sum now remaining to the credit of the commission which amounts to \$445,000.

Mr. ANDERSON. That sum will be covered entirely by purchases already contracted for.

Mr. HAWLEY. There are some recent purchases to be charged against this sum. Out of this fund, when we make a purchase, we charge it against the available balance. Of course, if the purchase is not consummated, that goes back into the available money.

Mr. ANDERSON. But this \$400,000 is now a free balance.

Mr. HAWLEY. With the above reservations, Mr. Sherman, who has charge of the examination work, will answer that question more in detail when he appears, and I respectfully suggest that you inquire of him relative to these details.

In the areas we have purchased there has been great destruction. Some of the areas that Mr. Lee and I saw had been burned so that

it looked as if the land would be denuded of vegetation for a long period.

Mr. ANDERSON. That was prior to the purchase?

Mr. HAWLEY. Prior to the purchase. And some of the land we refused to purchase because of its very badly burned state at the price it was offered, and what we did purchase was obtained for a very low price. It was necessary and would readily reforest when protected. But under the protection given it by the Forest Service the growths are being reestablished; the flood waters are being retained in the upper reaches; the waters do not all rush down immediately after precipitation or upon the melting of the snows, but they are retained in the humus and in the forest cover, so that there is a more continuous flow; the water is less high at the flood season and not so low at the low season of the water, which is a very important matter in the protection of the navigability of navigable streams.

The areas that are being protected are open for the public for playgrounds, under restrictions, so that the people in New England and in the south, where these lands are adjacent to the cities, can go on them and, under reasonable restrictions, can fish, hunt, camp, and have outings in a safe and protected area.

Mr. ANDERSON. Is the protection of these lands from depredation and from fire undertaken by the Forest Service of the Federal Government or the forest services of the States, or both?

Mr. HAWLEY. Immediately after we acquire a tract of land under the law it becomes national forest land, and you carry in your bills items of appropriation for the protection of these forests, just as you do for the protection of the forests in the West.

The protection of these lands has greatly added to their value; we are selling from them continuously various products; we are selling lumber, acid wood, cord wood, and other products. We are allowing the growing stuff to come into maturity in order to make it as profitable to the Government as possible without detriment to the proposition of protecting the navigability of streams.

Mr. ANDERSON. Can you say what the return has been from these lands since this policy was adopted?

Mr. HAWLEY. I have not the last figures.

Mr. SHERMAN. I can not state the total, but the total for the last fiscal year was \$110,000.

Mr. HAWLEY. I think the Forest Service will put an answer to your question in the record. So on the part of the commission we recommended that you continue this work, and that you continue the organization that has been built up for the examination of lands, so that we can continue to extend the work, fill in the areas, decrease the per acre cost of administration of each area, and protect the navigability of navigable streams, as was intended in the law.

Mr. ANDERSON. What has been the average expenditure of the commission per year?

Mr. HAWLEY. Ourselves?

Mr. ANDERSON. Yes; for the acquisition of lands.

Mr. HAWLEY. You will find in the report of the commission, from pages 7 to 11, the total expenditures. The expenditures on the lands that we have acquired are about \$8,000,000, but that would only be

a little over \$1,000,000 a year. I think the program ought to be enlarged a little for the reason I stated a moment ago, that it appears to us, with the experience of last year, that the next few years will be the very favorable years for the purchase of lands, and if the policy is to be continued, to give us the opportunity to buy the lands when we can buy them on the best terms for the Government would be good business policy.

Mr. ANDERSON. Do you happen to know where the appropriation for the current year was carried—was carried in this bill?

Mr. HAWLEY. The appropriation of \$600,000 was carried in the Agricultural bill.

Mr. SHERMAN. I will ask the committee to hear Representative Tilson.

FRIDAY, JANUARY 7, 1921.

FOR ACQUISITION OF LANDS AT HEADWATERS OF NAVIGABLE STREAMS.

**STATEMENT OF MR. E. A. SHERMAN, ASSOCIATE FORESTER,
DEPARTMENT OF AGRICULTURE.**

Mr. SHERMAN. I would like to make a general statement covering the entire field as briefly as I can. At the meeting of the National Forest Reservation Commission on November 7 the commission instructed Secretary Baker, as president of the commission, to transmit to Congress, through the Secretary of the Treasury, with the approval of the President, an estimate for \$10,000,000 to carry out the purposes of the Weeks law, by which the act of March 1, 1911 (36 Stats., 961), is commonly designated. The president of the commission recommended that the following language be included in an appropriation bill:

There is hereby appropriated, out of any moneys in the Treasury not otherwise appropriated, to be expended under the provisions of the act of March 1, 1911 (36 Stats., 961), as amended, for the acquisition of additional lands at headwaters of navigable streams, for the fiscal year 1922, \$10,000,000, to be available until expended.

H. R. 14854, introduced by Mr. Sells, of Tennessee; H. R. 15272, introduced by Mr. Weaver, of North Carolina; and H. R. 15523, introduced by Mr. Lee, of Georgia, carry similar language.

The estimate of the commission has been referred to the Committee on Appropriations and printed as Document 916. These three bills have also been referred to the same committee, and it is upon these measures and the commission's estimate that the Forest Service desires to be heard.

The creation of a National Forest Reservation Commission, its objects and purposes, have already been very admirably presented by Mr. Hawley, as a member of the commission. The original act appropriated \$1,000,000 for the fiscal year ending June 30, 1910, and \$2,000,000 for each of the five succeeding years. The measure did not become a law until after the fiscal year 1910 had passed and only four months of the fiscal year 1911 remained, so that during that year only \$17,230.76 was expended out of the \$3,000,000 appropriated for the first two years. The appropriation bill for the De-

partment of Agriculture for the fiscal year ending June 30, 1916, carried an item of \$3,000,000 available until expended, to replace the \$3,000,000 which lapsed under the time limitation of the original appropriation. The act of July 24, 1919, appropriating funds for the Department of Agriculture, carried an item of \$600,000 to further assist in carrying out the purposes of the act.

Up to the close of the fiscal year 1920 the commission had acquired a total of 1,796,788 acres of land at an average price of \$5.24 per acre. I would like to include in the record at this point a summary of lands approved for purchase by States, the total purchase price at the close of the fiscal year being \$9,418,907.48.

(Said summary follows:)

Summary of lands approved for purchase by States.

State.	During fiscal year 1920.			Accumulative to June 30, 1920 .		
	Acres.	Average price.	Value.	Acres.	Average price.	Value.
Alabama.....	10,440	\$4.90	\$51,189.50	62,966	\$4.73	\$298,055.95
Arkansas.....	18,400	3.44	63,291.56	36,529	3.33	121,795.21
Georgia.....	8,279	6.75	55,898.42	153,665	6.65	1,022,510.92
Maine.....	1,613	9.07	14,629.91	32,153	5.63	181,071.00
New Hampshire.....	13,302	6.46	85,929.82	401,026	6.69	2,684,226.21
North Carolina.....	4,701	8.78	41,257.00	326,786	6.24	2,039,352.40
South Carolina.....				18,612	5.55	103,296.60
Tennessee.....	8,650	4.13	35,700.00	246,675	4.69	1,156,331.72
Virginia.....	10,631	3.87	41,177.69	387,888	3.62	1,404,637.50
West Virginia.....	25,412	2.43	61,688.40	130,488	3.12	407,629.97
Total.....	101,428	4.44	450,762.30	1,796,788	5.24	9,418,907.48

Of the 1,796,788 acres acquired by the commission about 433,000 acres are located in the White Mountains of New Hampshire and Maine, the remainder being located in the Southern Appalachians.

I will not go into any details as to the special reasons urging the original appropriation. I will say, however, that the situation is much more urgent now than it was at the time the original appropriation was made. The public, after the passage of the act of March 1, 1911, and the appropriation of funds to carry out the purposes of that act, rested content that the situation was being taken care of. So long as our purchases continue and they feel that progress is being made, I feel that there will be no special demonstration of public sentiment regarding this particular item. If it is discontinued at the present time I feel that a serious mistake will be made. The commission also feels that the work should be continued at an accelerated rate. There are a number of reasons for this. In the first place, in 1911, under the market conditions prevailing at that time, the timber operator left considerable timber standing in the woods because it could not be removed at a profit; at the present time, with the high prices for pulp wood and for acid wood by wood-distillation plants, by the time the operator gets through there is nothing left standing upon the ground as thick as your wrist. When he gets through now there is practically nothing left but the bare ground. In our original purchases of cut-over and culled land we got the land in a comparatively satisfactory silvicultural condition, but that

is not the case at the present time if we wait until the timber is cut and removed. We have reached a stage where, if we wish to perpetuate the forests, we must acquire a considerable amount of land before the present crop of timber is cut and the desolation is allowed to proceed too far. We should acquire the land with the timber on it in order that the timber may be sold and that the cutting may be regulated, with the young stuff necessary for the future stand retained instead of being cut and removed. That will require the payment of somewhat higher prices per acre in the future than we have paid in the past; it will mean greatly accelerated returns at the Treasury, however, since in the past we have had little to dispose of except such material as we might salvage from that which was left by the former owners and operators under the belief that it was of no value. Secondly, appropriations have been made and are being made for the construction of roads through our purchase areas in the national forests. The construction of these roads naturally means that the land tributary to them is getting more valuable. We should make our purchases of lands tributary to the contemplated roads in advance of construction; otherwise the Government will be compelled to pay a higher price on account of its own investment in road construction.

Furthermore, the very fact of our protecting the lands that the Government has already purchased gives a considerable amount of protection to the intermingled holdings as a by-product of these lands by reason of their being in this area protected against fire, and such private lands are each year increasing in value, not merely because of the general rise in the value of real estate, but because of the special value given to them through the years that have passed without any injury from fire, a service that is actually being furnished at Federal expense. Thirdly, these lands should be purchased at an accelerated rate on account of the remaining private holdings being a menace in their present condition to the adjoining lands of the Forest Service, the adjoining lands that the Government has already purchased and upon which it depends for a very important public service in the future. In addition, it is cheaper and easier to protect and administer a given area that is 100 per cent in Government ownership than where half the lands are in private ownership and intermingled with the Government holdings.

Mr. Hawley has explained to you the policy of the commission in rounding out the holdings it has already acquired and its policy in endeavoring to complete purchases in the approved areas as rapidly as possible rather than to extend its operations at the present time into new regions, with one important exception. The exception he referred to is an area of approximately 1,000,000 acres lying in the northwestern corner of the State of Pennsylvania at the headwaters of the Allegheny River, an area which is to-day the largest area of desolated and devastated timberland to be found anywhere in the continental United States. This area was carefully considered by the Pittsburgh Flood Commission 10 years ago. At that time they found that 200,000 acres of it was practically an unproductive waste, and a recent examination made by the Forest Service indicates that the area of severely damaged cut-over land is to-day approximately 580,000 acres. This lies at the headwaters of one of the most important tributaries of the Ohio River and naturally affects the stream flow throughout the length of that entire system.

I would like to state, in addition to what Mr. Hawley has said, that the commission does not contemplate undertaking the acquisition of any areas where there is the slightest likelihood of the State being interested sufficiently to meet the problems within the boundaries of her own Commonwealth.

Mr. ANDERSON. Is there any such place?

Mr. SHERMAN. Where that is being done?

Mr. ANDERSON. Yes.

Mr. SHERMAN. The State of New York is making great strides in that direction; the State of Massachusetts is taking very encouraging action in that direction; and the State of Pennsylvania has also done so on the streams that are intrastate, but has not acquired lands of any consequence whatever at the headwaters of the Allegheny.

With the permission of the committee I will suspend and allow Mr. Pinchot to say a few words at this time in order that he may leave for his train.

ADDITIONAL STATEMENT OF MR. GIFFORD PINCHOT.

Mr. PINCHOT. I do not know that I have any prepared speech to make. I was asked to come here, and, of course, I am very greatly interested in the general subject of extending the acquisitions.

Mr. SHERMAN. I have just referred to the area in northwestern Pennsylvania. The commission has considered that the one additional area that should be taken up at this time.

Mr. PINCHOT. May I say a word about that, Mr. Chairman?

Mr. ANDERSON. Surely.

Mr. PINCHOT. As I understand it, there is something in the neighborhood of a million acres in two or three western counties of Pennsylvania which can be bought only in case the State government or the State legislature repeals a clause in the enabling act already passed, which provided that the State could take back at any time it chose the lands bought by the National Government at the same price paid by the Nation. This has hitherto prevented the commission from coming into Pennsylvania at all. The Pennsylvania State Forest Commission, of which I am a member, will, unless I am mistaken, vote by a majority of four to one in favor of the repeal of that clause, and I believe the thing can be carried through the legislature. At any rate, a very definite effort will be made to that end.

I hardly think it would be necessary for me to take up the time of the committee with any general argument in favor of the policy which has been adopted, and I am not sure that what I might say would be of any value.

Mr. ANDERSON. I think the only question that the committee will have to consider is the question of the imperativeness of this proposition at the present time. I do not know what the policy of the committee will be, but I assume it is very probable that the committee will not undertake to put in the bill any proposition which can well be deferred. If there is anything that can be said on this

proposition with respect to the necessity for continuing it, and the imperativeness of the proposition at the present moment, I think it might be very well to address yourself to that proposition.

Mr. PINCHOT. There are two things, it seems to me, to be said along that line, Mr. Chairman. One of them is the obvious argument that the longer we wait for these lands the more we will have to pay for them. That is true, speaking generally. The other is that there is going through the country at the present time a wave of interest in forest matters which should be taken advantage of. I know, for instance, that in my own State it is not only true that there has been more material in the papers of Pennsylvania in the last year about forestry than there has been in the previous 20 years, but the papers are hunting out material themselves; they are not merely taking what we supply them with; they are going after it, and it seems to me that the State is becoming convinced of the importance of the problem. I am very strongly of the opinion that, so far as our own situation is concerned—

Mr. ANDERSON. Let me ask you this question: How much damage would be done by deferring this proposition for a year?

Mr. PINCHOT. It is impossible, I think, Mr. Chairman, to answer that question in any quantitative way. I do not know. I should say that you have got a situation now where everything is favorable in Pennsylvania. If we are encouraged by the action of your committee and of the Forest Service, we can pass this repeal through the legislature. Our legislature meets only once in two years. You have got an interest on the part of the people of the State that has never existed before. Whether it will be there two years from now I do not know. I should say that if there is any such thing as a psychological moment, this is it in forestry in Pennsylvania.

Moreover—and this, of course, is a general consideration—the interruption of a policy of this kind is always unfortunate on general principles. If you have been going ahead with a plan of this sort, and drop it, it is not only more difficult to reestablish it after such suspension, but you have done away with a lot of public feeling, and sometimes with a lot of machinery which was all ready to proceed.

Mr. BYRNES. Of course, the other end of it is this: As suggested by the chairman, in presenting a bill to the House this committee is asked to present a bill carrying an appropriation, as I figure it here, for the Forest Service of \$19,587,000, as against \$5,000,000 carried for the present year, which was much larger than any previous appropriation—that is, without including this \$10,000,000.

Mr. PINCHOT. Without including the \$10,000,000 asked for acquisitions?

Mr. BYRNES. Yes: that is the angle we have to consider.

Mr. PINCHOT. I realize that you gentlemen have your own troubles when it comes to defending a bill on the floor.

Mr. BYRNES. My friend, the chairman, will have more trouble than I have, in view of the announced program of the majority party to cut the appropriations down, and if we proceed at this rate of three to one I imagine it would be very difficult.

Mr. WASON. I do not think it is fair to put it all on the chairman. I think you have similar views as a good business man.

Mr. BYRNES. I am not bound by the announced program.

Mr. PINCHOT. Mr. Chairman, perhaps the only thing for me to say is that we are ready for you in Pennsylvania, or will be ready for you, and we hope very much that the Nation will be able to stand the expense.

Mr. RUBEN. If we could devise some way to add to the appropriation and at the same time economize, we might be able to carry it.

Mr. PINCHOT. That has been beyond the power of the wisest, so far as I know.

I do not want to take up your time, and I am greatly obliged to you for your courtesy in the matter, and also to Mr. Sherman for allowing me to break in.

Mr. SHERMAN. Mr. Chairman, I have here a tabulation showing the acreage contracted for each year since 1911, the average price paid, the acreage actually paid for each year, and the total disbursements each year under the purchase feature of the Weeks law.

The most important item just now is that immediately following the head tabulation showing the areas under contract but purchase price not yet paid and other liabilities. The areas under contract amount to 375,583 acres and the outstanding liabilities to \$2 236,391.86, making total liabilities against our total funds available for purchases \$11,384,868.29. The total sums that have been available for purchases is \$11,626,441. This does not agree exactly with the statement as to the appropriations. The additional amount of about \$9,000, actually \$9,120.23, is contributions to this fund on account of moneys recovered from purchasers on account of timber cut and removed in trespass from lands under contract prior to actual transfer of title. That leaves our unincumbered balance January 1, 1921, \$241,572.70.

(The tabulation referred to is as follows:)

Statement showing acreage contracted for each year since 1911, average price paid, etc.

Year.	Acreage contracted for.	Average price.	Acreage actually paid for.	Total disbursements.
1911.....				\$17,320.76
1912.....	222,820	\$5.99		113,133.32
1913.....	415,603	4.75	\$103,186.21	884,309.95
1914.....	353,634	5.10	87,568.99	839,653.59
1915.....	244,173	5.90	157,520.46	1,139,140.26
1916.....	54,898	5.96	358,698.84	1,458,649.24
1917.....	175,463	4.86	240,223.00	2,011,330.69
1918.....	185,199	5.12	171,939.68	865,934.30
1919.....	103,355	6.35	221,530.23	1,135,952.99
1920.....	101,428	4.44	91,635.30	693,051.33
Total ¹	1,870,355	5.24	1,432,302.71	9,148,476.43
Areas under contract but purchase price not yet paid and other liabilities.....			375,583.00	2,236,391.86
Total.....			1,807,885.71	11,384,868.29
Total sums available for purchases ²				11,626,441.00
Unencumbered balance Jan. 1, 1921.....				241,572.70

¹ Actual acreage upon survey 1,796,788 acres. All contracts are based upon payment of an agreed price per acre, the area to be determined by a horizontal survey made by the Government.
² Includes \$17,320.76 expended from the \$3,000,000 originally appropriated for the fiscal years 1910 and 1911, and \$9,120.23 recovered from purchasers on account of timber cut and removed in trespass from lands under contract prior to actual transfer of title.

Mr. BYRNES. Mr. Sherman, with reference to this statement you have here, Mr. Pinchot has stated to the committee that he believed one reason why it was important at this time to purchase was that we could expect the price of the land to increase. I notice in the statement you have handed me that the average price paid for the acreage contracted for last year was the cheapest in 10 years. What is the explanation of that? It is \$4.44, which is cheaper than any year in the last 10 years.

Mr. SHERMAN. We have at the present time under option and under negotiation lands that have been offered for purchase at prices satisfactory to the Forest Service and to the commission, amounting in all at the present time to 183,330 acres, at an average price per acre of \$5.81.

Mr. ANDERSON. Is that in addition to the lands that are indicated here in this statement?

Mr. SHERMAN. Entirely in addition to the lands referred to there.

Mr. BYRNES. What is the explanation of this \$4.44? This statement shows that the highest price was paid the very first year—\$5.99.

Mr. SHERMAN. I was just coming to that explanation. During the past fiscal year and during the year preceding that we examined a great many more lands than we had funds which we felt we could use at that time for purchases, and we selected only the very best bargains out of a large area.

Mr. BYRNES. That is a pretty good policy, if you have not large funds, to select only the best bargains.

Mr. SHERMAN. That is a good policy to a certain extent. It would not be a good policy to say that we will only buy the one best tract.

Here is a tabulation showing the lands that we now have examined and that have been offered to us.

(The tabulation referred to is as follows:)

Land offered for sale to Government, examined, and ready for purchase by commission.

Purchase unit.	Exam-ined acreage.	Average price per acre.	Estimated total.
Alabama.....	16,000	\$5.00	\$80,000
Arkansas.....	14,000	5.00	70,000
Boone.....	7,000	6.00	42,000
Cherokee.....	7,000	7.50	52,500
Georgia.....	7,000	6.50	45,500
Massanutten.....	6,300	5.30	33,390
Monongahela.....	2,300	5.50	12,650
Mount Mitchell.....	5,600	7.50	42,000
Nantahala.....	3,150	6.50	20,475
Natural Bridge.....	23,860	4.70	112,142
Ozark.....	3,500	3.50	12,250
Pisgah.....	1,900	12.00	22,800
Potomac.....	1,480	6.25	9,250
Savannah.....	5,000	5.60	28,000
Shenandoah.....	33,800	5.50	185,900
Unaka.....	28,300	7.75	219,325
White Mountain.....	2,140	6.25	13,375
White Top.....	15,000	4.25	63,750
Total.....	183,330		1,065,307
Average price per acre.....		5.81	

Land offered for sale to Government, etc.—Continued.

Mr. ANDERSON. Let me understand this correctly. This shows the lands that have been examined and have been contracted for?

Mr. SHERMAN. None of that has been contracted for. The contracted for lands are in the first table I gave you. None of these lands have been contracted for.

Mr. ANDERSON. This land has been surveyed and a practical price arrived at?

Mr. SHERMAN. These lands have been offered for sale at a given price, and the lands have been examined, surveyed, appraised, and found to be a good buy at the price made. Of that amount there is a small amount actually under option. The option, of course, does not bind the commission, but merely binds the present owner. Forty-one thousand four hundred and forty-two acres are actually under option at the present time. They are included in this table.

(The table referred to is as follows:)

Desirable lands now under option by the Government.

	Acres.	Average price per acre.	Total price.
Alabama.....	1,000	\$5.01	\$5,014
Arkansas.....	5,080	6.26	31,785
Boone.....	118	5.00	590
Georgia.....	202	8.00	1,616
Natural Bridge.....	2,808	7.52	21,797
Onaka.....	24,971	8.13	203,119
White Top.....	7,173	5.04	36,124
Total.....	41,442	7.24	300,045

Mr. ANDERSON. I suppose that the cost of all the service connected with these sales, including surveys, perfection of titles, and appraisal, is borne by the Government.

Mr. SHERMAN. It is borne by the Government; yes, sir; and the expense incident to the purchase of these 183,330 acres that I have

referred to has already been paid, and practically all that remains about the matter up to the moment is to close the deal and determine by a final survey the actual acreage. You will notice that of the areas that we now have ready to put up to the commission the total price amounts to \$1,065,307.

Mr. ANDERSON. How long does it take, normally, to consummate an option after you have got that far with it?

Mr. SHERMAN. Then they have to be put up to the commission, approved by the commission, a survey is made, if they have not already been surveyed, and the titles searched, and the purchase price paid.

Mr. ANDERSON. The purchase price is not paid until the title is actually delivered?

Mr. SHERMAN. The purchase price is not paid until the title is actually delivered, but the commission does not approve the purchase of a single acre beyond the funds that Congress has appropriated for it, so the liability is set up by the Department of Agriculture against the appropriation as soon as the commission actually approves the purchase. In going before the commission we usually actually have options, and they simply exercise the option at that time, and then it becomes the property of the Government.

Mr. ANDERSON. On the basis of your present fiscal condition, these sales could not be approved in the absence of an additional appropriation this year?

Mr. SHERMAN. These sales could not be approved except for about \$200,000 worth. We could make purchases of about \$200,000 worth. In addition to that, we have under examination and partly completed, and will have completed by the end of the fiscal year, a total of 186,800 acres more which have been offered for sale, satisfactory as to locations and character, at an average price of \$6.01, a total purchase price of \$1,122,525. They are located in the various purchase areas. I have here a table showing them.

(The table referred to is as follows:)

Lands offered for sale to Government, now being examined and will also be ready for purchase by commission July 1, 1921.

Mr. ANDERSON. Suppose we do not make any appropriation this year, what will happen?

Mr. SHERMAN. If no appropriation is made this year, the first thing to do would be to call the commission together and put the matter up to them. My advice to the commission would be that approximately \$200,000 be used in exercising options upon lands that we have already examined, that the force be reduced, and the work of further examinations discontinued. During the past two fiscal years we have been examining a great deal of land, but have purchased relatively little as compared with the amount we have examined. We are getting accumulations now of the past work ready to draw upon at any time the different owners are willing to accept a satisfactory price. The commission felt that during the war they should keep down the purchases as low as possible. We trimmed down our organization and have not built up, but they felt at the same time that it was desirable to retain the trained machine we have in order that the work might continue whenever the Congress was prepared to provide additional funds. We have been running slack now for two years. Our actual purchase work at the end of the fiscal year will be about \$2,000,000 behind our negotiations.

This has a bad effect upon the private owners with whom we are dealing. It also has a bad effect upon our organization to carry on negotiations month after month and let them run for a year at a time after the price has been conceded to be right, and still no action taken. I feel that instead of continuing futile negotiations it would be better to clean up the work that has accumulated and discontinue until additional funds are appropriated. We have considered this very carefully. Of the available \$241,000, we could spend \$200,000 in exercising options, and the remaining \$41,000 would carry the surveyors, examiners, and title examiners whom it would be necessary to retain to carry out the obligations that the Government has already entered into by reason of these and other outstanding purchase contracts.

To recapitulate, at the close of the fiscal year we will be prepared to close negotiations for 370,130 acres of land within the present purchase areas at an average price of \$5.91 per acre and an aggregate price of \$2,187,232; or, in other words, our negotiations will start the fiscal year about \$2,000,000 ahead of our present appropriation. Of these 370,130 acres, the most important area is 77,330 acres in the purchase area of the Monongahela, about 22,000 acres on the headwaters of the Monongahela, tributary of the Ohio, and the remainder, or over 55,000 acres, on the headwaters of the Potomac.

In addition to that there will be 7,100 acres on the Massanutten purchase area, 2,480 acres on the Potomac purchase area, and about 13,000 acres on the Shenandoah purchase area, making an additional total of 22,500 acres, all on the headwaters of the Potomac. These pending purchases are of importance in connection with the proposed Rock Creek water-power development, but of much more importance in connection with the domestic water supply of the National Capital.

Mr. ANDERSON. I would like to get this straight in my own mind, if I can. How much of these lands contracted for will you actually consummate the purchase of next year?

Mr. SHERMAN. If we have funds, the total area that I have given you will be actually purchased next year; that is, the commission would authorize the purchase, and the liability would be set up and contracts closed. The commission will not authorize the purchase unless there are funds to buy them.

In preparing this tabulation I have not merely taken all the areas that we have examined and have been able to secure offers for at a proper price, but I have discounted the entire list 25 per cent all the way through to make allowance for negotiations that may, for one cause or another, finally fall through. Therefore, I feel certain that the commission would, if funds were available the coming fiscal year, actually contract for the total amount that I have stated, aggregating over \$2,000,000, based upon the work that has already been done.

The present organization would be able to examine and make proper surveys upon approximately an equal area, so that the present organization in itself, if the work of actual purchase is to keep pace with the negotiations, would require a fund for the coming fiscal year of approximately \$4,000,000 for current purchases.

Mr. ANDERSON. I did not get that.

Mr. WASON. Neither did I.

Mr. ANDERSON. You say you have \$2,000,000 ready to purchase?

Mr. SHERMAN. \$2,000,000 all ready.

Mr. ANDERSON. And you expect to purchase them? Where does the other \$2,000,000 come from?

Mr. SHERMAN. That is land that will be offered, examined, and should be purchased during the coming fiscal year. We will have during the coming fiscal year a great many reports to act upon in addition to those which are ready for contract at the opening of the fiscal year.

Mr. WASON. Are you talking about the Government fiscal year, or the calendar year?

Mr. SHERMAN. I am talking about the current Government fiscal year.

Mr. WASON. And by next year you mean 1922?

Mr. SHERMAN. 1922.

Mr. ANDERSON. Then, as I understand you, in addition to the land representing \$2,000,000, which you have ready for purchase now, you expect to have during the next fiscal year another block of land which would cost you another \$2,000,000?

Mr. SHERMAN. Yes; and for which we should close our negotiations during the fiscal year instead of letting them drag on for another fiscal year, as we have been forced to during the war period.

Mr. RUBEY. Let me see if I understand it. You have areas under contract, but the purchase price not paid, of 375,583,000 acres, or land valued at that amount?

Mr. SHERMAN. Yes. How is that again?

Mr. RUBEY. You have under contract land which will cost you how much?

Mr. SHERMAN. That will cost us \$2,236,391.86.

Mr. RUBEY. You have that land ready?

Mr. SHERMAN. Yes; including also our office and salary liabilities for the current fiscal year.

Mr. RUBEY. Now, take that last item. You say, "Unincumbered balance January 1, 1921, \$241,572.70." That is the amount you will have left over after you have paid for this land?

Mr. SHERMAN. Yes, sir.

Mr. RUBEY. So that between now and the end of the fiscal year you will have that much money to spend and will probably spend, as I understood you a moment ago to say, \$200,000 of it for land?

Mr. SHERMAN. Yes; at least.

Mr. RUBEY. Then, if no further action is taken by the Congress at this session, your operations will necessarily have to stop?

Mr. SHERMAN. Yes; they will necessarily have to stop as soon as we have carried out the existing contracts. It will take some time to examine the titles and make the surveys, but we figure the \$41,000 would do that, if it was wished that the work be discontinued.

The purchases during the last 10 years have been at the average rate of 180,000 acres per annum. The reports submitted to Congress in response to Senate resolution 311 show that our cut-over land is increasing at the rate of between three and four million acres a year. We have 81,000,000 acres of land that has been practically wasted, and this is being added to annually. As against this, we have, through purchases, increased our properly managed and protected forests by an average of 180,000 acres a year, so that we are drifting down the stream, instead of making real progress nationally.

Mr. ANDERSON. You referred some time ago to a million acres in the northwest country of Pennsylvania, and you said that 200,000 acres of that was entirely denuded. Suppose the Government buys it, what are you going to do with it? It will not reforest itself, will it?

Mr. SHERMAN. A good deal of it will, if it is protected from fire and taken care of; a considerable amount of it will reforest. Some planting will have to be done in spaces. The commission feels there that eventually the Federal Government should acquire approximately half a million acres out of the million, and of that half million I anticipate that probably 200,000 acres could be acquired at a low price during the next five years.

In considering the discontinuance of this work, the first thing I would remind the committee of is that if this is done a certain increase must be made for the protection and administration of the eastern national forests, since a considerable part of the administrative officers are being paid partly from the acquisition fund and partly from the fund for the protection and administration of the forests. The men will have to be kept on the forests anyhow, and if they can not be employed part of the time upon acquisition work, and a fair pro rata division made between the appropriations, it will mean that increases will have to be made upon the other appropriation.

Mr. ANDERSON. Tell us how much those increases will be.

Mr. SHERMAN. It is relatively a small amount. It is actually \$485, covering the part time for 12 people.

In addition to that, I would like to call the committee's attention to the existing technicality of much of this work. I can show that best some maps here. I have here what is known as a "grant" map, showing a portion of the Savannah purchase area in North Carolina.

This other map shows a section running through this part of the country. This is merely typical of what we have in North Carolina and in the other States, particularly in the southern Appalachians, in the matter of surveys and titles. In the State of North Carolina anybody can secure a grant from the State to any land he wants, provided he pays a certain minimum price, regardless of whether the State has already granted it 20 times or more to somebody else.

Mr. WASON. What is that about North Carolina and 20 different persons?

Mr. SHERMAN. That is true.

Mr. BYRNES. The same land?

Mr. SHERMAN. The same land.

Mr. WASON. What are their titles good for?

Mr. SHERMAN. They fall back upon the good old legal rule of caveat emptor—let the buyer beware. They will sell him anything.

Mr. BYRNES. How about when you become the buyer? Do you beware?

Mr. SHERMAN. We have to beware. We have had to go to work and prepare these maps in all our purchase-area country showing all the grants within the areas. In places we find as many as nine overlapping grants.

In addition to the fact that a grant may be defeated not merely by a prior grant, it may also be defeated by possessory rights; so that our survey work and our title work is exceedingly complicated.

This Jacob's coat—a coat of many colors—is typical of the whole problem. You will see here in many cases areas outlined with dotted lines. Those are known as "floating" grants. The description of such a grant will start from a gum tree and run in a certain direction for a certain distance to a pine tree, and then run in another direction to another gum tree, and so on.

Mr. BYRNES. What does the word "Highlands" represent here?

Mr. SHERMAN. That is a village—a resort.

Mr. BYRNES. This is all in the mountainous section of North Carolina?

Mr. RUBEY. Does that same situation prevail in South Carolina?

Mr. SHERMAN. Substantially so.

Mr. BYRNES. You admit that you have not been there to investigate yourself?

Mr. SHERMAN. I get that upon very reliable testimony.

Mr. BYRNES. It may be reliable ordinarily, but it is not true there.

Mr. SHERMAN. I would like to call the committee's attention also to some other maps, which show what a continuance of this work means to our present purchase areas. Here is a map of the Alabama National Forest. The green land, both colors of the green, are lands now in Government ownership. The yellow lands are the lands upon which we have completed our examinations. You will see how the lands remaining for purchase will block in and solidify the areas we already have.

Mr. ANDERSON. I notice you have here a symbol—"land withdrawn." What does that mean?

Mr. SHERMAN. These are a few areas here that were considered by the commission at one time for purchase, but purchase was not ratified, for the reason that there were easements outstanding that the

present owner could not secure, and it was thought desirable not to attempt to consummate the deal at this time, so that the offer was withdrawn.

This map of the Savannah area shows substantially the same situation as to the blocking in of the holdings.

Mr. WASON. Some of those fluctuating and nickel-in-the-slot titles are out in this territory, I suppose.

Mr. SHERMAN. Yes. These are all in North Carolina, however.

This map showing the Boone area also shows the same situation.

That, gentlemen, is the situation as it appears to us. We can go out of the purchase business if Congress wants to. We can start at once to trim down the organization and close out, and Congress need not hesitate for personal considerations, as far as the employees are concerned, because we can take advantage of resignations and transfers, and a good many of them can find employment elsewhere. We would have to retain a few anyhow until we can clean up the outstanding surveys, title examinations, and fulfill the contracts we have already entered into.

Mr. ANDERSON. None of the available appropriation will go back into the Treasury, if it is not spent within a certain time?

Mr. SHERMAN. No; there is no limitation on the outstanding amount. The Forest Service will leave the matter entirely in your hands, and you can carry it out either way. We can, as I say, either go out of the purchase business, or with the present organization we can make very desirable purchases during the coming year, aggregating \$4,000,000, or we can extend the work as the commission thinks we should do, and as the Forest Service thinks we should do. They feel that we have been using a teaspoon where a shovel is required.

I would now like to take this matter up somewhat regionally, and would like to have the situation, particularly in New England, presented by Mr. Philip W. Ayres, the forester of the Society for Protection of New Hampshire Forests.

STATEMENT OF MR. PHILIP W. AYRES, FORESTER OF THE SOCIETY FOR PROTECTION OF NEW HAMPSHIRE FORESTS.

Mr. AYRES. Mr. Chairman, I have been 19 years and some months a forester in the White Mountain region, and have been able to be associated with some of the people in New England who believe in the protection of the rivers of that part of the country, all of which rise in the White Mountain watersheds, and effect every State in New England directly except Rhode Island. It is with us an interstate matter.

I should like very much to abandon two or three thoughts that I had expected to put before you very briefly, in order, in view of the turn which this discussion has taken this afternoon, to answer directly if I can your question as to why this matter should not wait one year, and what would happen if the appropriation is discontinued this year, and with your permission I would like to show what would happen in the White Mountains within one year if this appropriation is discontinued.

Mr. ANDERSON. Do you mean both, or what? I am not talking about the abandonment of the proposition; I am talking now about suspending the appropriation for a year.

Mr. AYRES. Yes, sir. Let us limit the discussion, therefore, merely to suspension. In the course of the afternoon you asked both questions, and I thought perhaps I could address my remarks to both, but I will address them to one, namely, what will happen if we postpone this matter one year.

In the first place, in the White Mountains 446,000 acres have been acquired, which is 46 per cent of the original plan of the Government to control, in accordance with the terms of the Weeks law, the headquarters of the navigable streams of New England. These lands have been acquired at an average price of \$6.21 an acre, which is a dollar more per acre in New England than the average, and \$1.50 more and sometimes \$2 more per acre than lands that have been acquired in the Southern States, for the reason that the acquisitions in the White Mountains have been of higher-priced land and higher-priced timber, due to the fact that the great bulk of the paper supply of the country comes from the White Mountains, with some additional supply from New York and the Lake States. Until recently, and until our own supplies in the White Mountains began to be exhausted, we gave most of the paper to the country, but now that our supplies are so nearly gone, a goodly part of it is coming from Canada, and last year the paper industry invested several hundred millions of dollars in Canada nearer to the source of the timber that remains.

It so happens that in the White Mountains our valley timber has all been cut off. There remains on the highest slopes of the original stands only a little amount of timber. I have a map here which will show the exact proportions, and the last remaining high slopes, which are more valuable for water protection than they are for any temporary use for the paper supply, are being attacked at a rate which is most astonishing and unprecedented, due to the scarcity of the material and the high prices both of lumber and of paper. If you could come yourself to the White Mountains and see just what 4,500 men in one big valley can destroy in one day of the remaining timber which holds back the water for New England, you would join the large number of mills and other people that have sent delegations, several of which are present, to help put this matter over, and if you had been as I have for 20 years in the White Mountains and seen the continuous, progressive, irreparable, permanent damage which fire and erosion have done to those mountains within one generation, you would feel that we are exercising at the present time the intelligence of the Chinese Government with regard to its forests, and no better, with the single exception that we are using in the destruction of those mountains every bit of machinery that Yankee ingenuity can invent to do it quickly and within our own lifetime.

The people of New England have helped to get this original bill put through. The Boston Chamber of Commerce, from which I think you have a telegram on your desk urging that this appropriation be continued——

Mr. ANDERSON. If I have not got the telegram I am sure it is off the map.

Mr. AYRES. The Boston Chamber of Commerce has felt this to be a matter of such importance that not only should it be originally established, but that it should be continued even in these times of high prices and war deficits in your Treasury, and last year you gave

them \$600,000 to continue this work for the past fiscal year that ended on the 30th day of June, 1921. The Boston Chamber of Commerce has taken the lead in dealing with the chambers of commerce throughout the country, so that the merchants' association sent a letter regarding that particular person who was appointed to come here to-day, who has been unexpectedly called off and can not be here.

The Chicago Chamber of Commerce has its representative here now, who wants to be heard. The Pittsburgh Chamber of Commerce wants to be heard here on this proposition to-day, and the other chambers of commerce have their resolutions here, of which here is a list that I would like to submit in order that the original may be placed in the record. This is a list of the chambers of commerce and other organizations throughout the country that have adopted this. These people all expect the Government is going to continue this appropriation, and if there is any expectation that this will be discontinued for one year, I venture to say that the business organizations in all the New England States and all the rest of the country of which I have spoken, all the water users, all the timber users, all the factory owners that depend upon the supply of timber through the White Mountain region for paper, all the sash and door factories, all the woodworking establishments, all the furniture workers of our part of the country, who have greatly suffered from a lack of material already and have to import their stuff from the far West, a part from Georgia, and the rest from Canada, because our mountains are giving such a small supply, will come down here en masse instead of sending some few of us fellows down to see you.

Mr. ANDERSON. We are always glad to see you, gentlemen.

Mr. AYRES. They will be here, all right.

Mr. ANDERSON. Individually and collectively.

Mr. AYRES. New England will move down and camp in the suburbs of Washington in tents and automobiles.

Mr. ANDERSON. They will have to camp in tents, because I do not think there is any other room for them.

Mr. AYRES. Our feeling is that this is a fundamental resource which we have hitherto looked at in small ways as they have in Pennsylvania, and as Congress has looked at it, and that the fundamental use of timber in this country is more important than the temporary deficit in the United States Treasury which you gentlemen are trying to defend. We admire you for trying to defend it, because we know you have been elected to make appropriations that are necessary for the running of the Government, and that you have been requested to make those appropriations.

This is a matter which the Senate, by the way, has always been favorable to, and we expect to get by the Senate whatever the House allows.

Mr. ANDERSON. The Senate is always favorable to spending money.

Mr. AYRES. It has been favorable to this piece of legislation.

Mr. BYRNES. There it is easy, because you do not have to convince them of anything except that it is due as a courtesy to the gentlemen who ask for it.

Mr. AYRES. Seriously, we in New England do feel that the embarrassment of the Treasury is temporary, but that the sweeping off of the high slopes of the White Mountain can not be replaced. A tre-

mendous attack is going on, and if this appropriation is not continued we think a single year will make a difference which can not be repaired, because of the tremendous ownership that is organized behind the destruction.

Mr. ANDERSON. In just what way are these purchases going to stop that destruction, and to what extent are they going to stop it?

Mr. AYRES. May I show you on the map?

Mr. ANDERSON. Surely.

Mr. AYRES. These parts in green [indicating on map] are the areas that the Government has already acquired. They have bought the lands that were the cheapest and which the owners were ready to sell. They have been offered.

Mr. ANDERSON. Are these timbered areas?

Mr. AYRES. No; they are mostly cut-over areas. The 446,000 acres that have been acquired in the White Mountains are all cut-over land except 71,000 acres, and those 71,000 acres have been partly culled. The great majority of these 446,000 acres have been made self-supporting already, and these forests are beginning to carry the carrying cost and also yield a revenue to the Government. It is estimated that the land already acquired, if now offered for sale, would bring a price fully 50 per cent higher than the total cost of the Government outlay for it.

Mr. ANDERSON. What I am interested in finding out is just how this purchase is going to stop this denudation that you were talking about.

Mr. AYRES. Please note that the middle part of the White Mountain area is a large area that has not been offered to the Government for sale. These red places indicate where the fires have threatened the entire surrounding country that the Government has bought, and if you delay a year any amount of fire from this cut-over land, or very nearly cut over, except a little bit that I am going to tell you more specifically about in a minute, in answer to your question, which protects all the rest of that territory in time of fire—a fire from that middle area may sweep off a whole lot of these 446,000 acres that you have bought and that have been already started in the process of reforestation during the last eight years, in a more or less varying degree. The valley timber having all been cut off, the only timber that exists is on these high slopes around in through here [indicating]. All the valley timber is gone. We have not calculated exactly how much timber we have remaining in the White Mountains nor exactly what it would cost to buy up all the companies that are now operating in the White Mountains. We are not asking you to do that all at once, but we are asking you to do what will save, especially in that middle part of the mountains, the remaining timber which upholds the water flow of the Connecticut and all the water powers that are down the Connecticut and down the Merrimac, which flows on through the country, turning factory wheels, and turning more spindles than any other river in the world.

The same is true of the Androscoggin and the Kennebec, which goes over into this part of the White Mountain region, a part of this being the State of Maine. If this appropriation is discontinued for a single year a tremendous attack upon the forests will

there, and the water will be permitted to flow right down those mountains, because when timber is cut over it freezes that land for the first time in its history, the snow comes, and perforce, when the fresh winds come they make it necessary for that water to run off in torrents. These facts are given out by the Geological Survey.

[r. ANDERSON. How much of this area now under contract to the Government has not already been purchased?

[r. AYRES. Very little indeed, in the White Mountains. The purchases have been put up to within three or four thousand acres, I think, of the lands that have been examined there and found all right. At any rate there is only a very little under contract. We have a good deal under examination but there is very little of it in the White Mountains under contract to purchase, if the money is available.

[r. ANDERSON. How much is there still remaining in the area that has not been actually purchased now, or is not included in the amount which they still have available?

[r. AYRES. Within the purchase areas we have 446,000 acres acquired, and that is 46 per cent which the Government laid out in order to control the stream flow in the White Mountains, which it did eight years ago when it drew these boundary lines in black which you see around here. There are, therefore, something over 550,000 acres yet to be acquired.

The point is that the attack is unusual and very great, and we cannot wait and have anything left to protect the water flows. The effect of the bill is defeated if we let all of the woods be cut off; as they have all been cut off in the valley.

[r. ANDERSON. Is all of this cut-over land in this area held by the Government?

[r. AYRES. It is largely in the hands of three or four corporations which expect to completely finish up and leave their whole holdings in the area they have there in practically two or three years.

I am fortunate in having my own Congressman on your committee, and if I make statements that are not true, he can correct me.

[r. ANDERSON. We have a great deal of confidence in the gentleman, but not with especial reference to that in which he is particularly interested.

[r. AYRES. We will have to get enough Congressmen to overcome the other members of the committee.

[r. WASON. Do not be disturbed about that, because that is the custom with the average Congressman.

[r. AYRES. Well, Mr. Chairman, I thank you for hearing me at length. I simply feel that, so far as the White Mountains are concerned, the situation is more pressing than the situation in the United States Treasury. Col. Greeley will bear me out in the statement that in France all during the entire war, wherever they observed trees, it was under the direction of the French foresters, and the original forest capital in France was not destroyed by the war, although they put up wood houses for the American Army, the British Army, and the French Army, whereas in the White Mountains, where we made our cantonments, where we made our airplanes and went to Europe, with every piece of machinery known, we stripped the forests clean, and fire has gone over a part of the acreage they

have culled, and when fire goes over the White Mountain region it destroys the soil sometimes, as these pictures show you, and it always seriously cripples the situation.

I have some pictures of the White Mountain region, some of which I took myself 20 years after a fire, in which you see no reproduction at all, and another in which you see only cherry bushes of no great value, and it takes 100 years, at an elevation of 2,500 feet, for a spruce tree to grow into good timber, and another 100 years for it to get to merchantable size, so a killing fire, which must eventually sweep over 200,000 acres of forests in the White Mountains, altogether destroys the soil, and when you wash out the soil substance it means that we are more or less permanently crippled until another glacier flows over and gives the backing for a new fertility.

The situation, then, is serious, and I feel that I express the feeling of the main body of business men in New England, who will back me up in this matter.

I should like to have the approvals of these chambers of commerce in the record, if you please. It is only a list of the chambers of commerce, which includes the merchants' associations of New York and Philadelphia, and the chambers of commerce of Boston and Chicago, which are four of the leading commercial organizations in the United States.

(The list referred to is as follows:)

List of organizations whose resolutions favor continuing the appropriations under the Weeks law, all of which indicates their action to their respective Members of Congress:

Chambers of commerce and allied organizations.—Merchants' Association of New York City; Philadelphia Chamber of Commerce; Boston Chamber of Commerce; Chicago Association of Commerce; Cincinnati Chamber of Commerce; Buffalo Chamber of Commerce; Los Angeles Chamber of Commerce; Kansas City Chamber of Commerce; Pittsburgh Chamber of Commerce; New Haven Chamber of Commerce; Asheville (N. C.) Chamber of Commerce; Pennsylvania State Chamber of Commerce; Syracuse Chamber of Commerce; Indianapolis Chamber of Commerce; New Hampshire Manufacturers' Association; Chillicothe (Ohio) Chamber of Commerce; Omaha Chamber of Commerce; Maine State Chamber of Commerce and Agricultural League; Portland (Oreg.) Chamber of Commerce; Springfield (Mass.) Chamber of Commerce.

Industrial organizations.—American Paper and Pulp Association; National Wholesale Lumber Manufacturers' Association; National Association of Box Manufacturers; Public Domain Commission, State of Michigan; Appalachian Logging Congress (N. C.); Eastern Shook and Box Manufacturers' Association.

Forestry and allied organizations.—National Forest Reservation Commission; American Forestry Association; Southern Forestry Congress; New York State Forestry Association; Massachusetts Forestry Association; Appalachian Mountain Club; New Hampshire State Federation of Women's Clubs; Ohio, Indiana, and Illinois Tristate Forestry Conference; Daughters of the American Revolution, Sun Dial Chapter, Ames, Iowa; Department of Conservation, State of Indiana; Iowa Conservation Association; North Carolina Forestry Association; Central Council of the National Federation of Women's Clubs; Audubon Society of New Hampshire; Northwestern Conservation Association; Society for Protection of New Hampshire Forests.

Mr. BYRNES. Have you any information as to what consideration those chambers of commerce gave to this matter?

Mr. AYRES. Yes, I have; because when the Boston Chamber of Commerce undertook to get this, I was one of the delegates who happened to be present, and they put another forester there who could tell of the conditions in the White Mountains, and that in-

formation was sent to the other gentlemen from Chicago, Philadelphia, and so on, and the Boston Chamber of Commerce, instead of taking it up with the United States Chamber of Commerce and putting it on paper, sent delegates to these several States in order to show them our situation in the White Mountains.

Mr. ANDERSON. The committee will pay tribute to the efficiency with which you have organized the chambers of commerce.

Mr. RUBEY. If you presented your claims to the chambers of commerce as well as you have presented them to the committee, we are not surprised that they send their indorsement.

Mr. AYRES. Representatives from the Chicago Chamber of Commerce and the Pittsburgh Chamber of Commerce are here, and can speak for themselves.

FRIDAY, JANUARY 7, 1921.

STATEMENT OF MR. HARVEY N. SHEPARD, PRESIDENT MASSACHUSETTS FORESTRY ASSOCIATION.

Mr. SHEPARD. Mr. Chairman and gentlemen, I know that you are weary, and I am not going to take up five minutes of your time, and if I had known just the turn that the discussion was going to take I should not be here at all; because what I have to say will not bear very directly upon the difficulty which I understand confronts your committee.

While I am president of the Massachusetts Forestry Association, I am not here representing that association. I am here representing the Appalachian Mountain Club, a club 50 years old, with 3,000 members, mainly in Massachusetts, but also in every State of the Union. It began its existence in order to make known the peaks of the White Mountains. It has built trails up to all the principal mountains at its own expense, not for the benefit of its own members but for the whole community. It has built stone huts upon the highest mountains, some at an elevation of 5,000 feet. The last hut we built at an expense of \$5,000, raised by our own members, where we have no rights other than those of the community, in order that travelers may find shelter from storms and may find something to eat and a place to sleep.

Twenty-five years ago we began to make trails to places of scientific and historic interest in the White Mountains, and we acquired a number of reservations, two of them, which we made over to the Government as soon as you began the policy of acquiring the forests, and now we hold from 30 to 300 acres which we maintain at our own cost for the benefit of the whole community.

This is the fourth time I have been before the Committee on Agriculture on this subject, representing the Appalachian Mountain Club. Once also I spoke on behalf of the Commonwealth of Massachusetts, by appointment of the governor, when the bill was referred to the Judiciary Committee, when I was selected to make an argument in favor of the constitutionality of the Weeks act, which I did before that committee.

I only want to say this, Mr. Chairman and gentlemen, I realize, of course, the great pressure upon Congress, and that you have been

at an enormous expense, and the people, of course, desire that there shall be no further waste of money, and that there shall not be any useless appropriations. I know the sentiment of the Appalachian Mountain Club, I know the sentiment of the Massachusetts Forestry Association, I know the sentiment also of the Commonwealth of Massachusetts, because for six years I was a member of the first State Forestry Commission which was established for the purpose of making purchases of land in our State forests.

Massachusetts has no selfish interest in this matter at all. We do not want a dollar from the United States Government. We are establishing our State forests. We have acquired all the State mountains in the State, and hold them as State reservations. We are simply interested because we believe it is to the advantage of the United States that these White Mountains shall be preserved as a place of recreation, not simply for the people of New England, but for the whole United States. We shall be extremely sorry if there is any stopping of the policy that the Government has entered upon. We thank you for what you have done, and we want you to go on and complete the whole holdings, and we will cheerfully bear in the Commonwealth of Massachusetts our part of the burden, although we are to receive no benefit from it other than goes to all the people of the United States.

I thank you for your kindness.

Mr. ANDERSON. I would like to have the committee hear Mr. Benjamin A. Hapgood, of Springfield, Mass., who represents the chamber of commerce of that city, and is particularly interested in the flow of the Connecticut River.

STATEMENT OF MR. BENJAMIN A. HAPGOOD, REPRESENTING THE CHAMBER OF COMMERCE OF SPRINGFIELD, MASS.

Mr. HAPGOOD. I fear, Mr. Chairman, that the honorable State of Massachusetts is rather prominent in the hearing to-day. It seems to be rather numerously represented, and I will not refer to the ability.

Our chamber in Springfield has shown its interest in this matter by sending a representative here to appear before this committee. We are particularly or locally interested in the development of the river itself, both from the point of navigation and also of water power. It so happens, as has been shown here so ably by Mr. Ayers, that the Government has acquired more or less land in New Hampshire. We are very much interested in having it acquire more land. In Vermont there has been nothing done as yet. Vermont has not passed an enabling act whereby the National Government can acquire land.

This interest has led to some activity, so that we can say now positively that a bill has been prepared and will be introduced in the Vermont Legislature during the winter giving the National Government that authority. That is a long look ahead, perhaps, because until that act has been made a law the necessary examination, survey, securing of options, etc., in Vermont will not take place; but to conserve the water power of the navigable areas of the Connecticut requires the securing of land in Vermont just as much as it does in

New Hampshire, because the Connecticut, for its whole length from Canada to Massachusetts, flows down as the boundary line between New Hampshire and Vermont, although our good friends in New Hampshire claim that the river is wholly in their State.

Mr. WASON. That is a fact.

Mr. ANDERSON. It is a fact that you claim it?

Mr. WASON. And have possession of it.

Mr. HARGOOD. In any event, we do not get the river until Vermont and New Hampshire get through with it.

At Springfield we now have a company which has been organized and proposes to build a dam at Windsor Locks, about 10 or 12 miles below Springfield. This will produce about 30,000 estimated horsepower. Plans for this dam have been approved by the Army engineers, and an application for a license under the water-power act has been made. This will bring navigation to Springfield, and also secure the water power.

These are the reasons why we are selfishly interested in securing additional land in New Hampshire and Vermont for the development of the river. Our own State, as has been stated just now, does not look for any money, as fortunately we are caring for the local matters ourselves. We are also in a large way interested in this whole question throughout the country. Our interest is not by any means local. In fact, the lumber supply, as applied to Springfield, is just as acute as it is in any other eastern State.

Mr. BYRNES. Did I understand the gentleman who preceded you to say that this organization had built trails in the White Mountains in New York?

Mr. SHEPARD. The Appalachian Mountain Club?

Mr. BYRNES. Yes.

Mr. SHEPARD. Yes. When we began 20 years ago there were only two of the White Mountains that were accessible. The other mountains have been made accessible by what the Appalachian Mountain Club has done.

Mr. BYRNES. Those trails were not built by the local authorities?

Mr. SHEPARD. Not at all; not at the time. Since that time, through our example in part, and through the interest we have aroused, they have been building trails also, but the great bulk of the work has been done by the Appalachian Mountain Club. These trails connect the local trails, and we try to maintain what we call trunk lines, and then we have built three of those stone huts that I spoke of. We have just built two log huts, which were built at great expense. I wish you could see the traffic over those mountains. They come by thousands and tens of thousands every year.

Mr. BYRNES. Every year except one for 15 years I have been there in the summer, so I know them.

Mr. SHEPARD. I wish you could see what I saw. If I may take a moment of your time, I went up some five years ago to a summer spring hut which was 5,000 feet above the sea, and there I met 30 girls that had come from Michigan and were tramping over these mountains for the first time. That would not have been possible if we had not had that hut there so that they could stay overnight.

Mr. HARGOOD. I do not know, Mr. Chairman, that there is anything further that I can add, except that Springfield is a ver-

proud city. Sometimes we say we are the only western city in the East. It is rapidly coming to the front as a commercial and industrial center, and is destined in no short time to be the primary interior city of the East. It is a junction point of the trunk-line railroads, and when we have navigation, it will come much more rapidly to the front.

Mr. SHERMAN. Mr. C. W. Whittlesey, of New Haven, Conn., who represents the chamber of commerce of that city, will now address the committee.

**STATEMENT OF MR. CHARLES W. WHITTLESEY, REPRESENTING
THE CHAMBER OF COMMERCE, NEW HAVEN, CONN.**

Mr. WHITTLESEY. Mr. Chairman and gentlemen: I feel as though I had as little title to your kind attention as some of those titles down in North Carolina that you heard about, as you must be now pretty tired, but I will take very little of your time. I also feel something like the last speaker at a banquet.

I represent the chamber of commerce of the city of New Haven and the Waterville Valley Association of Waterville, N. H.

In the first place, the city of New Haven is interested in the White Mountains, although Connecticut is 250 miles from the White Mountains. That is on account of the Connecticut River, which was so eloquently described by two or three people. At Hartford, under present circumstances, the river has a rise and fall of something like 10 or 12 feet, so you can see that Connecticut, as a State, is interested in the White Mountains indirectly.

Our river, in order to maintain its navigable features, must be free from excessive torrential features, which we are told by all the experts on the subject obtain when the source of supply is denuded and the holding properties of the forests are gone.

I would like to read just a word from my credentials. Mr. Julin, the general manager of the Chamber of Commerce of New Haven, writes me as follows:

As you know, the chamber of commerce has for years petitioned Congress in favor of a strong conservation program with respect to the Appalachian watershed, particularly the forests along the Connecticut watershed.

That was my reason for appearing to-day. Connecticut has not, so far as I know, a single acre of land that it wants to sell to the Government. We have not any interest in that way.

As to the Waterville Valley Association, that is an association incorporated under the laws of New Hampshire for the purpose of taking over quite an area in the Waterville Valley and taking possession of the hotel and cottages there which have for a long time been a summer resort. This was on the market, but in the hands of a big timber company, so we got together this organization, and I happened to have the honor of being the purchasing agent of the society, so that I have been over this region quite a good deal and observed many of the things that Mr. Ayres has spoken about technically and can tell you about from a technical standpoint, which I can not, but I can confirm what has been said, from my observation.

There is one vast area that I have observed every year for 10 years. When I first observed it, it had been cut over, I think, something like five or six years, and had been burned. I really can not

see any improvement in that area since that time, since I first observed it. I do not think it is worth a dollar more from the growth of timber now than it was then. It is one of those cases of devastation due to unscientific forestry operations.

Then our company has worked largely in connection with the Appalachian Mountain Club in regard to the trails. I am speaking now of the sentimental side of it. I do not know whether you people would care to know about that, but just a word about it. Our association connects up with the Appalachian Mountain Club on many of these trails. We have something like 60 miles of mountain trails that we keep up, and when I say keep up I do not mean that we concrete them, or anything of that kind, but we cut the blow downs off once in every two or three years and keep them passable. We have a few trails over in other regions of the White Mountains, as probably you gentlemen know who have been there.

As to the necessity of keeping this thing up, it seems to me that the discussion has narrowed down practically to the point whether we are going to lose a whole lot by leaving it out one year. My opinion may not be worth very much, but during that year you may lose a lot of watersheds. It does not take a gang long to clean up a whole territory of a water-conserving forest. I know of places where, if certain gangs that I know of should go in there, would not last a week, and yet that water is being conserved there and being held back.

I think the Bureau of Forestry will show you the data which will show two certain areas exactly alike in slope and everything else, one denuded and the other forested, and the water disperses from one in half the time that it does from the other. That will mean a torrential condition in the streams, but it will be too late if we put these things off, because the lumber companies, stirred on by the tremendously high prices they are getting, are not sparing anything. They are operating up in the Waterville Valley, where they can not transport decent lumber, and cutting up logs that are not of the size for pulp, so that they can float them down the river. It is the most horrible waste that you ever saw. There is lumber there that is worth a tremendous amount of money, if it could only be made into real lumber, but it goes into pulp.

That is my excuse for asking that this appropriation should be continued.

Here is the last paragraph I wrote on that. I understand that no argument in favor of preserving these lands and forests because of their beauty can be considered by this committee, but the Government has expended vast sums in the West on national parks, and it is the hope of many that in the near future, and before it is too late, there may be a White Mountain forest preserve in reality.

I thank you very much.

May I put these credentials in the record?

Mr. ANDERSON. Without objection, they may be inserted.
(The matter referred to is as follows:)

Mr. CHARLES W. WHITTLESEY.

Care the C. W. Whittlessey Co., New Haven.

DEAR MR. WHITTLESEY: The Chamber of
takes pleasure in asking you to attend, as it
a committee of Congress on January 7, 1921

NEW H... .., January 5, 1921.

... of New Haven, Con
... representative, a hearing bef
... of pending legisla'

to conserve and to protect the forests of the United States, especially the New England watershed.

As you know, the chamber of commerce has for years petitioned Congress in favor of a strong conservation program with respect to the Appalachian watershed, particularly the forests along the Connecticut watershed.

Very truly, yours,

THE NEW HAVEN CHAMBER OF COMMERCE.
By CHAS. E. JULIN,
General Manager.

WATERVILLE VALLEY ASSOCIATION (INC.),
Waterville, N. H., January 5, 1921.

At the hearing on the appropriation bill for the preservation of forests, now before Congress, Charles W. Whittlesey, Esq., of New Haven, Conn., is fully authorized to represent the Waterville Valley Association (Inc.), a corporation organized under the laws of the State of New Hampshire.

One of the objects of this corporation was the preservation of certain forest tracts in the Waterville Valley, N. H., and Mr. Whittlesey, who is vice president of the corporation and a member of its executive committee, was much interested in promoting its organization for the purpose of purchasing and preserving as much of the timberlands there as the finances of the company may warrant. The company now has about 125 stockholders and owns about 500 acres of land.

H. C. FABYAN,
President and Chairman of Executive Committee.

Mr. SHERMAN. The executive secretary of the Pittsburgh Flood Commission, Maj. W. M. Jacoby, is here representing that commission and representing the Chamber of Commerce of Pittsburgh. He arose from a sick bed to attend this meeting, and has asked to be excused from making a detailed statement, but is glad of the opportunity at this time to say just a word regarding the desirability of the continuation of the work.

**STATEMENT OF MR. W. M. JACOBY, EXECUTIVE SECRETARY
PITTSBURGH FLOOD COMMISSION AND REPRESENTING THE
CHAMBER OF COMMERCE OF PITTSBURGH, PA.**

Mr. JACOBY. Mr. Chairman and gentlemen, I just want to say that the organizations which I represent sincerely hope that there will be no interruption of the forestry program as outlined in the bill of 1911, but that the work will be continued, and not lapse even for one year. I thank you.

UNITED STATES DEPARTMENT OF AGRICULTURE,
Washington, January 11, 1921.

HON. SYDNEY ANDERSON,
House of Representatives.

DEAR MR. ANDERSON: Maj. W. M. Jacoby, of the Pittsburgh Flood Commission, has transmitted the inclosed statement, which he desires to have included on page 2107 of the hearings held before your committee January 7, 1921. If consistent with the practice of your committee, I would be glad if this could be done.

Very sincerely, yours,

E. A. SHERMAN,
Associate Forester.

**STATEMENT OF W. M. JACOBY, EXECUTIVE SECRETARY, THE FLOOD COMMISSION OF
PITTSBURGH, PA.**

In addition to the Flood Commission of Pittsburgh, I represent the Chamber of Commerce of Pittsburgh at this hearing to-day. Both organizations have directed me to strongly urge upon you the passage of the \$10,000,000 appro-

appropriation to continue the work of the National Forest Reservation Commission and to express the hope that there be no interruption in this important activity of the Federal Government.

The Chamber of Commerce of Pittsburgh was one of the first organizations in the country to petition the Federal Government to establish and maintain a forest-conservation policy. A resolution on the subject was adopted in 1903. In 1907 the chamber of commerce created a flood committee of seven members, which subsequently organized the Flood Commission of Pittsburgh as a separate organization. The chamber of commerce now has a membership of 5,500, the flood commission a membership of 150.

The flood commission received contributions from property holders affected by floods to the extent of \$150,000, which was expended in making a comprehensive survey of the 29,000 square miles of the watershed of the Allegheny and Monongahela Rivers and the publication of a report which is said to be the most complete on the subject ever issued. This report recommended the construction of 17 storage reservoirs at the headwaters of the two rivers and the erection of a low wall around the down-town section of Pittsburgh.

The natural reservoir sites selected were located in the forest lands of Maryland, West Virginia, and Pennsylvania. The Flood Commission assisted in the passage of the Weeks Appalachian law and later induced the Forest Reservation Commission to purchase forest areas embracing its reservoir sites in Maryland and West Virginia. The State of Pennsylvania refused to pass the proper kind of enabling act, and no purchases were made in that State. At the present time, however, there is ample evidence of a desire on the part of the authorities of Pennsylvania to pass an enabling act which will permit the Federal Government to make purchases in that State. Mr. Gifford Pinchot, present State forester, has agreed to lend his influence in that direction. Mr. E. A. Sherman, associate forester, has stated to the Flood Commission that if the present bill is enacted and the enabling act passed by the Legislature of Pennsylvania the Forest Reservation Commission will immediately undertake the purchase of 100,000 acres of forest lands in Pennsylvania, included within which are the principal reservoir sites selected by the Flood Commission to regulate the flow of the Allegheny River. Mr. Sherman characterizes the situation on the Allegheny River watershed in Pennsylvania as the most acute in the United States. With these purchases accomplished, the Government will own practically all the reservoir sites designed by the Flood Commission to prevent floods at Pittsburgh and in the upper Ohio River.

The plans of the Flood Commission have been investigated and approved by the Corps of Engineers of the United States Army and by the National Waterways Commission. A board of Army Engineers reporting in 1916 on flood conditions throughout the United States urged the making of surveys and the preparation of final plans and estimates of cost for flood-prevention works on several rivers of the country, including the Allegheny and Monongahela and their tributaries. A bill is now pending in the Flood Control Committee of Congress for putting the recommendations of the Army Engineers into effect in so far as the Allegheny and Monongahela Rivers are concerned.

This brief history of the work of the Flood Commission is given to emphasize the importance of the present bill. It is highly essential that the reservoir sites required on the Allegheny River should become the property of the public as speedily as possible, and the granting of this appropriation, as has been shown, will be an important step in that direction.

Mr. SHERMAN. I would like the committee to hear Mr. J. S. Holmes, the State forester from the much maligned State of North Carolina.

STATEMENT OF MR. J. S. HOLMES, STATE FORESTER OF NORTH CAROLINA.

Mr. HOLMES. Mr. Chairman and gentlemen, I have had the privilege of attending the hearings for a few minutes this morning, and I just want to make a few remarks along the line of the urgent necessity.

The southern Appalachian hardwood region, which I have the honor to represent from North Carolina, is surrounded by a large number

of wood-using industries. In fact, it is the center of the wood-using industry of the south central region. All around it in the various States are a large number of furniture factories and other industries, located there because of this central hardwood region.

From a study made in North Carolina last year I discovered that the supply is diminishing very rapidly. We find that the wood-using industries had their supplies reduced from 70 to 100 per cent in the past decade, and that many of them face a complete depletion in 10 years; that, in general, lumber is reduced 35 per cent; in building material, flooring, and siding 44 per cent; in furniture to only 7 per cent of a sufficient present supply. None have any assurance of future supplies. Eighty-seven per cent of the vehicle manufacturers report their supplies exhausted, or greatly reduced, and only 11 per cent have any outlook for even a 10-year period.

That applies practically the same to all the industries of the southern Appalachian region depending upon the region.

Lumbering operations in the western North Carolina mountains and east Tennessee, northern Georgia, etc., are coming to a close, the large operations within a very few years, in fact most of them within five or six years, and a good many of them within two or three years. The lumbermen themselves are realizing that they have to dispose of these cut-over lands in some way, and for the first time since the purchases began the lumbermen of the region are very favorable toward this purchase program.

I attended an Appalachian logging congress which represented the lumbermen of that region, in Ashville last summer, and they passed a resolution strongly indorsing this program, especially requesting the Congress of the United States to adopt a permanent policy looking to the acquisition of cut-over lands for national forests at prices which will encourage the landowners and operators to secure a young growth to protect such lands from fire. They realize that they are not in a position to hold these lands permanently for another growth. If the private owner could hold these lands for another growth, it would be a different question. It seems to me and to the landowner themselves, and to the people of North Carolina and the South, that these lands should be in the hands of the Federal Government as the permanent owners, not only for the protection of the streams but for the protection of our timber supply for the industries of the region.

North Carolina depends upon its own State to a certain extent, but all the States call upon the other States for their supplies, and it is an interstate business.

The difficulty of securing these lands increases each year. As a lumber company ceases operations, they sell off certain parts that may be considered agricultural land, very small areas, and they hold others until they can unload them or sell them at a profit, and, of course, as they are sold the price increases and the ownership becomes more complicated.

For that reason it seems to me that it is a very pressing necessity that the purchase be continued at once. One year's delay perhaps is not entirely fatal, but it is making the proposition much more expensive, and it is greatly delaying the program and subjecting the lands to forces which are destroying the young growth of that region and destroying the more valuable species.

I do not think I have anything more to say at this moment.

Mr. BURROUGHS. I wonder if I might be allowed to ask this witness one question while he is on the stand?

Mr. ANDERSON. Certainly.

Mr. BURROUGHS. Mr. Holmes, the statement has been made to me recently that, I think, 95 per cent or thereabouts of the mills of the South would probably be obliged to go out of business within the next 5 or 10 years. Are you in any position to state whether that is probably correct?

Mr. HOLMES. The statement has been made, but I think that includes the southern pine operations. I am not sure whether it is 95 per cent. It was a very large per cent, I know, that expect to go out of business in the next 10 years, and a good many in five years. That includes the southern pine operations through the South, not only in the hardwood region.

Mr. SHERMAN. From the passage of the act of March 1, 1911, until his resignation just a little over a year ago, Maj. William L. Hall during that period handled the acquisition work under this item and passed upon purchases. There is no person living that knows more about the work of acquisition and the difficulties of the problem, the difficulties of building up an organization, than Maj. Hall who organized the work in the first instance. Maj. Hall is here from Chicago, and I will ask the committee to hear what he has to say on the subject.

Mr. ANDERSON. The committee will be very glad to hear him.

STATEMENT OF MR. WILLIAM L. HALL, CHICAGO, ILL.

Mr. HALL. Mr. Chairman, I will say that I do not represent any organization or any other person than myself in this matter, and my own impersonal interest. During the time from 1911 to 1918, while I was in charge of the purchase work, I not only had to do with helping to lay out the purchase areas, but in organizing the work and having the examinations made and the surveys made, and in getting the title work going and in determining the value of the lands to be acquired. That work took me to every one of the purchase areas and to some areas that were considered in which purchases have not been made.

My statement I want to direct entirely to the point you raised, Mr. Chairman, of why do this thing now. It seems to me that would be most helpful to the committee. In the first place, it ought to be done now because we are facing a problem of large importance in this timber situation. It is a problem which touches not only the southern Appalachians and New England, but it touches the Lake States, it touches the southern pine region, and it is beginning to touch the far West, as I have found out by personal touch with the region during the past year. It is a problem which has come upon us very fast because it has been going on so long and the effects of it are just now beginning to accumulate in a most practical fashion.

What has just been referred to about the cutting out of the southern pine mills is but a reflection of that destruction in the southern pine region which has been our main timber producing region for the last 25 years.

The problem here is to deal with this problem at this session of Congress, in the second place, because next year you can not deal with it so well, and the cost will be tremendously more. In some regions you can perhaps measure almost exactly the ill effects that will take place, but you can not do it for the country as a whole, and Mr. Greeley tells us that 4,000,000 or 5,000,000 acres are being cut over very closely every year. Some of that land is not protected from fire. That is multiplying our problem very fast, so that if you wait one more year and declare a holiday in this matter and let a gap occur at this time, instead of having an appropriation of \$2,000,000 or \$5,000,000, to accomplish the same result, you will have to make an appropriation of many more millions. The appropriations will have to be very substantially larger and more will have to be done.

A third reason why it is important to do this thing now is that you may keep what is properly to be considered as a continuous piece of work going continuously. There are some things we do not stop under threatening conditions. As I sat here I thought of several of those things. Because the country faces serious times the country has not said, "We will not have a Congress this next year." The Congress is going to meet and function. Because there is a possibility that business may not be good, the banks of the country do not close their doors. The department stores do not close their doors. They have to go right on. Now, here is a case in which, if you close down this work, there is going to be a very substantial loss. That loss will take place in several directions, but one important direction will be in losing the organization by which this work is being done. I can say to you, and you can verify it from other sources, that it took three years to organize this work and get it going in proper fashion. It was a difficult piece of work because of the character of the lands we had to deal with. You may see that from the title situation and the surveys. We had to get men of some experience and then train them further; we had to train timber valuation men, timber appraisers; we had to train surveyors for that particular kind of work, and following that we had to train title men who could go in and work out those titles in safety to the Government's interests. If you stop that work now and take it up again all that preparation has got to be done over again.

There is another disadvantage in allowing this work to go on in an irregular fashion. If you appropriate \$2,000,000 for one year, and then miss a year, and the next year appropriate \$600,000, and then perhaps miss another year or two, you are making the overhead of this business a much heavier charge than it ought to be, and much heavier than it would be if you gave the work the right kind of support in resources. The fact that there has been only \$600,000 appropriated during the past two or three years means that an overhead organization is to be carried up to this time, an overhead that could have handled larger purchases, and therefore the expense per acre has climbed, and it is bad business. I really believe that if a course has to be decided, and you feel that nothing much can be done, it would be better to stop the work off short for five years and then take it up and go ahead with an even gradation of appropriations rather than having it up year after year. You can not go

along and do business satisfactorily and with a good showing to the country under that kind of support.

Now, I want to show, as a further reason why this work should go on, a fourth reason, the results of past purchases. Since 1911 about \$11,700,000 have actually been expended under these appropriations. You have bought about 1,800,000 acres of land at an average price, if you include the examinations, surveys, and everything, of about \$6.25 an acre. That land has proved a wonderful investment. It is worth to-day, I am fully convinced, more than double the money it has cost. If you take the money that has been spent for the land, the money that has been spent for examinations, cruise surveys, title surveys, and for clerical work and overhead, and add to it all the money that has been spent under the annual appropriations for protection and administration, you have still got an investment that has netted the Federal Government more than 8 per cent—how much more I have not figured, but I am confident it will be more than an 8 per cent investment. The country is stronger to-day because of these purchases that have been made. It is better able to make an appropriation of \$2,000,000 or \$5,000,000 for this coming year because of the purchases that have been made under former expenditures of money that have been, I believe, wisely made.

No question has ever been raised about it, and the proof of the fact is that in many instances the Forest Service, in making sales of timber, has sold products from the lands that amounted in money to two or three times and even a higher amount than the purchase price of the tract with the timber, and it has left a good deal of growing timber on the land, so that it has not been something that you need to question, it has not been something that ought not to go on. It is something that has proved itself, and we are better able to go on with it because we have handled it properly up until now.

These forest purchases come in as an integral part of our national forest system, and really are the backbone of our whole forest policy of the country. The bulk of the national forests is in the West. These are being established in the East, and these areas that are being acquired are at once put under the administration of the forestry organizations, and what is actually being realized there is not being realized on any private lands and can not be realized even under fire-protection plans.

It happens that this is a matter that the Federal Government can handle more effectively than individual owners can. No individual owner could have taken hold of it and made it an 8 per cent investment. The Federal Government has been able to do it.

Those are the reasons why I believe the thing ought not to stop for one year.

This same question came up in the last session of Congress, and as one of those who were interested I thoroughly considered it with others who were interested in the problem, and after very careful consideration we went to members of Congress and said that because of the deficit then imminent we would withdraw the request and no further request would be made of Congress for an appropriation for this present fiscal year. I believe that was a mistake. I believe that in spite of the deficit of \$22,000,000 this work ought to have gone ahead on a reasonable basis, and I believe it was just

as serious a mistake to let it go over another year, even a more serious mistake, because it will be harder to start next year than it is this year if you let it go over.

Therefore I add my testimony to the testimony which has been given—that this is a matter of extreme importance and that it ought to go on now.

Mr. WASON. Mr. Hall, in giving your opinion about the investment in the purchases you did not attempt to consider in a monetary way the advantage from the water of the different streams?

Mr. HALL. Not at all.

Mr. WASON. You are just taking the land value?

Mr. HALL. The resources that are salable.

Mr. GREELEY. If I may be permitted to add just a word to what has been said, the primary purpose of this is not to make money for the United States through shrewd investments in timberland, and yet I want to emphasize the point made by Mr. Hall that in addition to the great gains obtained through the regulation of stream flow and through securing conservative methods of cutting in lieu of the type of slashings that Mr. Ayers referred to there is a substantial business gain through the enhanced value of the timber that we buy.

Let me illustrate that by two or three average cases. In the White Mountains our purchases of standing timber during the year 1912, where that was included in the tracts acquired, averaged \$1.16 per cord of soft woods. Our sales from those identical areas during the last fiscal year brought us on an average of \$5.59 per cord of soft-wood timber.

Mr. WASON. Standing?

Mr. GREELEY. You know those sales cost 40 cents per cord to make and administer the sales. As compared with the purchase price, therefore, there was a net gain on the timber we bought in 1912, which we sold in 1920, of \$4.03 per cord, or not quite four times the original purchase price.

In the Pisgah area of North Carolina we made rather extended purchases during 1911 of pine-timber species at an average price of \$2.80 per thousand board feet. In 1920 our sales from those same areas averaged \$6.80 per thousand board feet, and to make and administer the sales in accordance with the Forest Service cutting requirements cost us 35 cents a thousand, leaving a net return of \$6.45 on the timber for which we paid on an average of \$2.80 nine years previously.

Mr. BYRNES. What do you include in ascertaining the cost of administration? It all depends on how you figure that.

Mr. GREELEY. It includes the cost of appraisal, of selling the timber, and of measuring the timber as it is cut, and of supervising the cutting operations in such respects as the disposal of slashings and the meeting of other requirements necessary to leave the land in satisfactory condition.

Mr. ANDERSON. That does not include any interest on the investment and no overhead?

Mr. GREELEY. No, sir; that is the administrative cost on the field; but the overhead would be a matter of a very few cents per thousand.

Mr. BYRNES. The business man always finds that interest on investment and overhead amount to something, but nobody in the Government ever considers that at all.

Mr. GREELEY. If you figure that increase from \$2.80 to \$6.45 in nine years, you will readily see that that represents a pretty high rate of interest, and would carry an overhead cost very much greater than actually has been true in this case.

Mr. ANDERSON. Did you buy the timber originally separate from the land?

Mr. GREELEY. No, sir; the timber was bought with the land, and in the figures which I have given you the prices indicated were the valuations put upon the timber as separate from the land.

Mr. WASON. At the time of purchase?

Mr. GREELEY. At the time of purchase. In addition to that, of course, we have the land, and we have the land steadily in a much more productive condition.

Now, as to the primary question of continuing the work at the present time, I wish to summarize what we have to urge from that standpoint very briefly. We can not claim that the country would be plunged into hopeless disaster if this work was suspended for one year or two years, but, in the first place, we now have a going organization, we have examinations covering a large number of desirable tracts, we have negotiations in progress with a large number of owners, we have negotiations for options that could be closed within a very short period and with a very small additional expenditure for field expenses. To cut that work off now would mean, from a business standpoint, a tremendous loss through the termination of this going organization and the termination of the pending business negotiations. That, perhaps, is not a very important factor, but it is a very material factor, and as Mr. Hall indicated, to chop off of this work now and disband the organization which has been perfected to handle it would mean that to recover the lost ground a few years hence when the work was resumed would take not less than three years.

In the second place, and I think this is more important from the broad standpoint of the issues that are involved, the whole timber supply situation of the country, which is becoming more and more critical, very clearly demands Federal action along two lines as practical remedies. The first is the policy that you had under consideration this morning, as to a comprehensive Federal plan for cooperation with the States and private owners in preventing forest fires. The second is the extension of the Federal forest holdings. We can not nationalize all of the forest lands in the country. No one has advocated that. But it has been true in this country as it has been true in all of the progressive countries of Europe, that in working out our problem of the timber supply to a basis where we have a current growth from our forests equal to the current needs of the country, there must be a large and well distributed body of national forests to set the pace and to take care of the most critical local situations. That work can not be done hurriedly. If this work should be abandoned this year or next year, and then a few years hence, with the critical situation of the United States as to its timber supplies more acutely realized, much more acutely felt than it is now, the Congress should take this matter up and should give the Forest Service the task of rapidly extending the national forests, there would be very fixed limitations upon the rate at which that work could be done.

It is not a proposition, gentlemen, that can be done hastily and at the same time be done efficiently. The Forest Service takes a great deal of pride in the record we have made hitherto in the character of these purchases, in the pains with which the examinations have been conducted, and the survey valuations at which our lands have been acquired, but that can not be done on an enormous scale. At the maximum, 2,000,000 or 3,000,000 acres a year probably represents the most that our organization could acquire efficiently, with an efficient expenditure of public funds. It means that instead of a stopping and then a subsequent renewal of work, you need rather to sustain the activity with a sustained organization, preserving the experienced personnel, preserving the local knowledge, preserving its examination records and reports, and gradually increasing from year to year as the demands of the country make the necessity for pursuing this policy on a larger scale.

The greatest loss now, as I view it, in a suspension of this work at the present time, would be the difficulty of taking up the work later on and carrying it from then forward on a scale that I see perfectly well the country is going to demand, for with our 81,000,000 acres of denuded land in this country being added to by 4,000,000 or 5,000,000 acres every year, the demand for an extension of the public forests as the real practical solution of our timber-supply problem is going to be irresistible.

There are many industries that are demanding it. The interests depending upon watershed protection and a stable stream flow are going to demand it, and I view it as something that the country has got to consider as an inevitable public policy, and if that is correct we can not afford to lose any time.

As was stated this morning, the recovery of a region of country from a depleted timber supply is a long-time proposition. It can not be done in a year or so. It can not be made good like a shortage in farm crops. It is a matter of 50 years, at the very least, and from that standpoint, gentlemen, we can not afford to be losing time; we can not afford, as I view it, to break up an organization that is going ahead steadily at the gradual rate given us to carry on this work efficiently.

I think that is all, Mr. Chairman, we have to present on this item.

Mr. ANDERSON. I would like to ask you to what extent are the lands purchased susceptible to reforestation?

Mr. GREELEY. Every acre that we buy is land that is susceptible to reforestation, and the great bulk of it can be reforested by natural means, by keeping out fire, primarily. We have some areas that will probably have to be planted, but it is all primarily forest land.

Mr. ANDERSON. What part of it contains merchantable timber?

Mr. GREELEY. I would like to ask Mr. Ashe to answer that question. It is a comparatively small percentage, is it not? What part of the land contains merchantable timber at the time of purchase?

Mr. ASHE. That is difficult to state.

Mr. GREELEY. The average.

Mr. ASHE. We make timber sales from practically all the land that is bought, except that classed as barren.

I will just give an example. We paid \$2.75 an acre for 4,000 acres in Virginia. A sale of timber from that land was afterwards made

by the Government at the rate of \$3 an acre. Timber which was considered valueless at the time the land was purchased has since been sold for more than enough to cover the original purchase price of the entire tract.

Mr. ANDERSON. What provoked both of those questions was what I recall of the debate that took place on this legislation, and that has taken place at various times with reference to these appropriations, in which it has been claimed that a large part of this area consisted of barren mountain tops and peaks that never would be suitable for reforestation and contained no timber at the time of purchase.

Mr. ASHE. Mr. Chairman, less than 5 per cent of the area is land that has had no merchantable timber upon it.

Mr. GREELEY. At any time.

Mr. ASHE. At any time, and that is distributed in small bodies, the largest areas being in the White Mountains, where there are some timber lands that were valued by the Forest Service at 25 cents an acre, just a nominal value to hold the earth together. That is our appraisal price on those lands.

Mr. ANDERSON. Is there anything further, Mr. Greeley?

Mr. GREELEY. Nothing further on this item.

Mr. SHERMAN. There are a number of representatives of the Wood Users' Industry here, who wanted to be heard upon the shortage of material, but since the hour is late, they will not be asked to be heard upon this item.

Mr. GREELEY. I would like to be given an opportunity to explain an item which was discussed this morning, the forest products item, if agreeable to the committee.

Mr. ANDERSON. If there are any gentlemen who desire to be heard, the committee will be glad to hear them, I am sure.

Mr. GREELEY. That refers again to the discussion of item No. 71 on page 129, covering investigations in forest products. I would like to ask Mr. W. A. Babbitt, of South Bend, Ind., to say something on that item.

FOR EXPERIMENTS TO PROMOTE ECONOMY IN THE USE OF FOREST PRODUCTS.

STATEMENT OF MR. W. A. BABBITT, SOUTH BEND, IND.

Mr. BABBITT. Mr. Chairman, I am simply a business man, who has been forced to confront the question of what is happening to all this timber that we have got after it is cut down and put into the shape of lumber, and I have the position of chairman of lumber conservation of the National Association of Wood Turners, which presents a new angle to this question and confines its attention to the problems that are presented by lumber itself.

We have heard a great deal about the way our forests are being cut down and destroyed, but so far as I know I am the first one to ever be commissioned with a job, in addition to all my many business duties, that has to confront the problem of the wastage that has grown up in our processes of manufacturing trees into lumber and, in turn, manufacturing lumber into finished products.

To turn back to a question which came up this morning, I want to say that the work that we are attempting to do in saving the waste out of the present processes of manufacturing lumber is one which is peculiarly crippled by the fact that the hard wood working industries can carry on in the old way they are doing things, and that there is a waste of lumber in enormous percentages.

For example, some industries are themselves wasting about from 40 to 50 per cent of the tree to manufacture the boards, and then are not getting more than from 40 to 60 per cent of the usable lumber out of those boards they are manufacturing. In other words, it seems to the Association of Wood Using Industries that we have got to face a new angle to this situation; we have got to begin to undertake at once to solve the question how we can get out of the tree the lumber that is now being wasted in so many inevitable ways.

In my investigations, which are purely gratuitous, I have found some plants are wasting as high as 75 per cent of costly lumber, lumber sometimes costing as high as——

Mr. ANDERSON. What sort of plants?

Mr. BABBITT. Wood-using plants, all the way from automobile plants to little wood-turning plants.

I have some figures which I have collected, and a fair example, Mr. Chairman, would be hickory handles. There is such a waste in that, that they only get 400 pounds of handles out of 2 tons, or a long cord of hickory. They simply work on the theory and the policy of getting something on the market as quick as possible, and as cheaply as possible, that they can sell at a profit.

Now, then, gentlemen, I hope you will not hesitate to ask questions, because, perhaps, on this line I might, of course, not be able to answer all questions which you may ask, but we are very conversant with the proposition.

We have found, for example, that this waste can be reduced in many instances. Speaking of furniture—somebody brought that question up this morning as to whether furniture is as good as it used to be or not. I can tell you something about furniture. It is not as good by a good deal as it used to be, and I am going to tell you why; because of the stupid way we have of handling the logs after they are cut down. That is why it is, and I want to say to you gentlemen that the lumbering industry amounts to an awful waste, from 40 per cent to 60 per cent of the plank in the product.

Now, these things are serious matters, and I am bringing them to your attention because I am afraid you gentlemen forget the importance of this laboratory, and as chairman of this lumber-saving committee I am here asking you to increase their appropriation and allowance so that they shall be able to take up with us this tremendous problem.

Now, I started to use as an example the method in the manufacturing of hickory handles. We find from actual experience that they are not using a very large proportion of the hickory log.

Mr. BYRNES. Why is that?

Mr. BABBITT. Because of their ideas; in spite of all of the information, or the source of information of the laboratory, and in spite of the service which has been given to them, they have an idea that a white piece of brittle wood is worth more, and that a white handle

is worth more, and will sell for more money than the solid yellow handle that has got twice the strength.

Now, gentlemen, I am bringing facts to your attention because I want you to realize what a tremendous educational proposition is before us. I want you to see it.

If we can switch, for instance, a small industry like the Association of Wood Turners, which only cut up 2,000,000,000 feet of lumber a year, and if we can get them to effect a saving from 20 to 25 per cent out of that 2,000,000,000 feet of lumber and get the same amount of manufactured products, in other words, get them to save the waste, that would be a tremendous saving, and they could increase the product all the way down the line. If we could get them to cut that saving in the use of hardwood, I should say that they will save 800,000,000 feet of lumber every year in that one little industry.

I am quoting facts to you gentlemen, because we know what we are talking about when we are talking about these enormous wastes, and I hope that you gentlemen will do as we are asking you to do.

Mr. ANDERSON. It seems to me that this is to a certain extent a proposition for the business. Here we are giving them the information and the figures, and if they have not got brains enough to use them, I do not know how we can furnish them with any brains.

Mr. BABBITT. Well, I want you to see that it is a serious problem. It is up to the House to provide the brains. They have always done it at both ends of the Capitol, and we are going to expect them to continue to do so.

Mr. BYRNES. It seems to me that your statement is rather remarkable—

Mr. BABBITT (interposing). What, about the waste?

Mr. BYRNES. Yes; the average business man in America has not been charged with being absolutely devoid of sense, and you say that you find that they know they are having this waste, and it certainly has been a very expensive one during the last few years, and notwithstanding that fact and the difficulty of securing lumber, they continue to waste. I want to ask you why they continue this waste in that case?

Mr. BABBITT. I am glad you raised that. That is a very pertinent question.

Mr. BYRNES. Have you ever convinced any man that he was wrong and you were right?

Mr. BABBITT. Oh, yes; because the figures are incontrovertible.

Mr. BYRNES. You have actually convinced them?

Mr. BABBITT. Yes; but this is an educational problem, and we are making very slow progress. We are now getting face to face with a real proposition regarding the problem, and I want to tell you gentlemen that it is an educational problem that will take much time, but we are going as fast as we can.

Here is the situation: Until very recently the lumber men looked in a scant way at a proposition of cutting dimension stuff for the wood-working industry. They have compelled us to accept the lumber as it comes from the mill, and there has been more lumber produced than was necessary to meet the demand. But since the situation has become such as to force us to study this problem, as we have had to study it during these days of scarce lumber, it has been demonstrated that

there is a great deal of waste. Of course, during the last three or four years, during the war, we had no time to study it, but until very recently they could get all of the good lumber they wanted. Freight was low, wages were low, and in cases where the lumber did not come up to specifications it was discarded.

We had long-established customs behind us, and if you do not believe it is hard to change a custom get into the Senate or some other place like that, and you will find how tremendously permanent ancient customs are, and that is what it will mean to take the woodworking industry and get them to adopt this proposition.

You can laugh at my statement all you want to, but I want to tell you that I have been through the woodworking industry perhaps as few men have. I have had an opportunity to study it a great deal, and I find these conditions are forced upon us.

Now, as example, in order to economically manufacture wood products, we have got a task before us that is too big for any single industry to undertake. That is the reason why we want the help of the Government in getting at it. We have got more work in standardization. Look at this table [indicating], for instance. If you will examine it closely you will find that it is made up of small pieces of lumber. It is what you call dimensions. We have got to go to work and go through every industry in this country and standardize in order to find the dimensions that can be cut up.

Now, for example, we can go into the woods where our ash grows, our small ash grows, and when we examine them we find that we can get dimensions that will go into, we will say, limousines, if they ever get to manufacturing automobiles again. That wood is now cut out of southern ash, and in order to get the pieces they want they will rip up a plank containing four times the amount of lumber required. We find that with our smaller northern ash they can get the lumber that is required for that manufacturing.

There is no technique; there is no production of dimension stock with any accuracy on the part of any producers in the country which will permit or enable the wood users to get the supply they want, and that means that, instead of getting the dimensions they want, that they must rip up a plank that is much larger than they want, and that results in a great waste, and we can not help but waste. You understand, of course, that they can only get so much dimension stock from a timber tree. But, instead of cutting it up into dimension stock, they will cut it up into planks, and when we go to use it we can only get about 40 per cent of utilizable timber out of a tree.

Now, we can go all over the country to the different industries, and we have already men in the field who are going from one industry to another and attempting to get them to agree on standards and to agree on market conditions, and all such matters. Some of them are highly technical—too much for me to fully understand—but we are driving on that proposition in order that, instead of having this big problem of waste on our hands, we may eliminate it. In the mill in which I am interested I know we are not utilizing at all all of the lumber that we should.

Gentlemen, a large lumber buyer told me that he put 24,000 feet of choice hardwood under his boilers every day, and he is not manufacturing lumber, he is manufacturing wood products. That is the

way it runs when the industry is running at full time. At present I do not suppose there is that much waste at all; but that was a year's average. And the only way we can eliminate this is to study it and produce the dimension stuff that we want.

Now, then, this situation has been rendered very acute by the present situation. A great many people with whom I am associated in business—we are in the wood-turning industry, and we have just prepared a statement for our members warning them as to what has happened up in New Hampshire and Maine and along in the Berkshires in Massachusetts. We used to be able to buy lumber up there for \$40 a thousand.

Of course, it is now costing \$60 and \$70, but under the present conditions, we are manufacturers, and manufacturing thousands of feet, and we are paying \$70 a thousand for this birch lumber. But, suppose under the present conditions that you are manufacturing thousands of feet of this birch lumber, for which you are paying \$70 a thousand, and taking the lumber as it comes to you from the mill. You reduce that birch lumber to the kind of stock that you can use, and the sizes that are needed in the wood-turning game, and you will find that that lumber is costing you \$134 a thousand because you have to pay the heavy freights on all of this that is not used. That is on a \$12 freight rate. Of course, on a \$20 freight rate, which is the average freight, this lumber will cost you \$147.21 a thousand for the kind of lumber that you can use, put into your plant.

Now, the object in bringing these statements before you is this, that the wood-using industries have become acquainted with this situation. They have at least realized how important this matter is; but, gentlemen, in order to secure a solution of it which will save this waste we must have an opportunity to do it immediately. We can get almost immediate action. It depends upon the effect of the wood-using industry, and in getting together, and we could get together in less than six months to consider our mutual interests, and arrive at an understanding, gentlemen, as to what we want to do.

We can get together right away, and we can change things that are not based on customs, and determine upon the things which we know are uneconomic and bad business policy, but we need the help of the laboratory on the technical side, a neutral force that will harmonize the difficulties between the lumbermen and the lumber users, the manufacturers of the wood products. Get us together; get us to agree on the things which will eliminate this vast waste.

I think the most conservative man that ever studied these figures would say that more than 40 per cent of the lumber now wasted would be absolutely saved as an asset to our country and as a reduction in the cost of living to our people if this proposition which we are here behind in all earnestness and supporting, and which is supported by the wood-using industry, may be put across.

But you understand that it is an educational campaign. Getting right back to this proposition, this educational policy has reference to the lumber we wood-using men will buy—the lumber we will buy. That is the idea. You know that the personnel—our members are manufacturers and are members of these great associations scattered all over the country, and they should be given this information as to the value and the possibilities and the utilities of the using of

dimension stock as a means of saving the lumber situation. They should be taught to stop cutting up planks and to make dimension stock direct, and get the industry to standardize on marketable shapes and stocks.

Now, I just want to say one other thing, there are so many angles to this proposition. Suppose that a manufacturer says that he is going to buy dimension stock this year, and will make a contract with a man to furnish him with the stock that he wants, he will have a great saving.

We get 45 per cent culls from the average mill up around the Great Lakes. I have never seen such a depreciation in the world except in the depreciation in cull hickory in this country. But out of those culls, since we have the high freight rates and prohibitive handling rates and high wages, if we study this proposition we will find that right here between two knots we can cut out good lumber. But the greatest good would be to go out in the woods and show them how to cut those logs. They do not know anything about what the manufacturers want. They go largely along in the old way.

Gentlemen, I assure you that with a very, very wide acquaintance with the lumber operators in this country I can name on my fingers the only ones who are really intelligently and in a thoroughgoing way attempting to get the largest possible result out of the logs in suitable lumber.

We have no criticism to make of them at all. They are after the proposition of selling their product to the best advantage and with the least worry and difficulty.

So I want to ask you to consider this thing. The wood-using industry is a national concern. It is a national industry in this country. We want to help you; we want to help bear the burdens of the laboratory. We want the help of the laboratory; we want it to be the medium between us and our source of supply, so that the thing shall be handled fairly and equitably and that this matter, which is of prime importance, shall be put across.

Now, let me tell you just one thing more, and I am done, although I will be glad to answer any questions that I can which you may ask. I just want to tell you one thing more. You have heard this one big question discussed before the committee to-day about the disappearance of the large lumber operations. Gentlemen, most of them have disappeared. It will only be a very few years until they have all disappeared. I have traveled this country year after year from coast to coast, and my own knowledge convinces me that outside of the west coast, within 10 years lumbering will be a portable-mill proposition, as it is in New England to-day.

We can take this small stuff and cut it up into dimension stock, so that the great white-birch areas in Maine and in the New England States and in southern Canada, which in some of those States has been considered absolutely useless, we can use. We can use all that stuff, and we ought to be enabled to use it to the greatest advantage of the most people.

I just want to call your attention to one other thing, and that is if we can save this 40 per cent out of a cut of about 40,000,000,000 of board feet a year it certainly is something worth considering. I suppose I am sentimental, too, like the chairman of this committee—

Mr. ANDERSON. No; Mr. Wason and Mr. Byrnes furnish all of the sentiment for the committee.

Mr. BABBITT. But every time I see a great tree fall I seem to feel sorrow, although I know I am going to make some money out of it.

But it seems to be a thoroughly established proposition that if we can approximate a reasonable saving that we know is in this change of procedure in this manufacturing of wood products we will be able to match everything that the Forest Service can accomplish in the regrowth and reforestation of our great public domain, and together I believe that if we can have fair and reasonable support of our Government it would accomplish a great deal right where the need is for help, at the Forest Products Laboratory. That is where the scientific questions have got to be settled and can be settled to the satisfaction of both sides; and, gentlemen, we will be able to put our country where we shall never know what it is to lack for sufficient products of our great forests to keep us in comfort, and our progeny, if we have any, to the last generation.

I thank you.

Mr. GREELEY. Mr. Chairman, can you hear Mr. Quinn?

Mr. ANDERSON. We will be very glad to hear Mr. Quinn.

STATEMENT OF MR. DON L. QUINN, OF CHICAGO, ILL.

CONSERVATION OF PACKING BOXES.

Mr. QUINN. Mr. Chairman and gentlemen of the committee, I am in charge of the research division of the Chicago Box and Lumber Co., probably the largest manufacturers of packing boxes in the country. I am also a member of the committee on standardization and specifications of the National Association of Box Manufacturers, the Association of Wire Bound Box Manufacturers, and the National Association of Egg Case and Egg Case Filler Manufacturers, and I represent all of those at this hearing.

At first blush one thinks that the subject of the conservation of packing boxes is rather an unimportant thing, but more than 6,000,000,000 feet of lumber, or approximately 16 per cent of the total amount cut, goes into boxes and crates.

Because of our activities in these various associations we believe that we are thoroughly competent to appreciate and probably appreciate the value of the research work in the Forest Products Laboratory on the subject of packing boxes and crates and are glad for an opportunity to tell you how much we appreciate their work, and how we are supplementing that work.

Boxes and crates are used everywhere. Almost every industry in the country uses packing boxes or crates. If they do not use them for the care of their own manufactured products, they are used for carrying supplies received by that company.

Almost every industry carries packing and packages as a separate cost item in their estimates. Any deviation in those figures is immediately reflected in the selling price of their commodities. They are not made a part of the factory cost or operations and lost sight of when changes occur. Consequently any acquisitions which are effected or secured in the cost of packing and packages is almost immediately translated into the changed price of the commodities to the retailers.

Those of us in our company, and in these associations who have been following closely the results of the research study on packing boxes and crates in the Forest Products Laboratory, and this includes not only the engineers in the box-production industry, but many leading business men and manufacturers, and many leading packers in industrial plants, believe that as a result of what has already been accomplished that at least 25 per cent of the material now used in boxes and crates can be conserved without any loss in the efficiency in those packages, but rather with a gain of efficiency or serviceability.

If that estimate is true, then at least one and one-half billion feet of lumber is wasted annually. On the present market price of this material that one and one-half billion feet costs the ultimate consumer, the ultimate user of those boxes, more than \$100,000,000 a year, and to that amount we add the enormous loss and damage claims paid by the transportation companies, due to insecure packing, packages failing to carry the goods safely to their destination.

The interests which I represent believe that in the elimination of this enormous waste there is an opportunity for the Forest Products Laboratory to render a service to this country which can not be rendered by any other organization in existence.

With the funds available for the work in the Forest Products Laboratory on this subject of box study, box designing, which was less than \$10,000 a year, they have been able to accomplish results which they have accomplished up to this time solely because of funds which have been appropriated by the various associations of wood-using industries.

For instance, the National Association of Box Manufacturers appropriated the funds necessary to carry on the research study of canned-food cases. About 150,000,000 canned-food cases are used annually. The National Canners' Association is authority for the statement that as a result of that research study 65 per cent of the boxes now used for carrying canned goods can be made with less material and be stronger and better packages, 20 per cent of the boxes need not be changed in construction, and probably 15 per cent will have to be strengthened—more material used in them.

Sixty-five per cent of the 150,000,000 boxes used annually in that industry is pretty close to 90,000,000 boxes. One cent saved per box on that would amount to \$900,000 annually, which gives you some idea of the possible saving reflected by the research work which they carry on. They carried on this work with the Railroad Administration when they were in control of the roads, the Railroad Administration asked the Forest Products Laboratory to carry on research study on boxes for boots and shoes.

The laboratory had no funds for the work and the National Association of Box Manufacturers furnished the money to carry on that study and do the physical end of the work. Last June the Ordnance Department of the Army furnished, I believe, about \$10,000 for research study upon the use of metal straps on boxes. Unfortunately—

Mr. ANDERSON (interposing). I might say that if the Railroad Administration and the Ordnance Department would use less money you would probably have more now—

Mr. QUINN (interposing). Well, that is probably true.

Mr. ANDERSON (continuing). For the Forest Products Laboratory, I might say.

Mr. QUINN. Unfortunately, the research study which the Forest Products Laboratory undertook for the Ordnance Department could not be completed within the fiscal year ended last June, and the work would have stopped except that the National Association of Box Manufacturers and the manufacturers of steel traps came across with funds to allow them to carry on that work, and it is being carried on at the present time.

Many individual manufacturers are turning to the Forest Products Laboratory and asking them to test their packages and make recommendations for more efficient packages for carrying their goods, and they are unable to get that help unless they themselves pay the cost of the study.

We ourselves established a duplicate of the Forest Products Laboratory in our own organization and are operating at the present time at a cost of a little more than \$20,000 a year. We are trying to apply the fundamentals which were developed in the Forest Products Laboratory to the packages for our customers. We are spending nearly \$60,000 a year advertising that fact to our customers and to other business concerns. That is the effort that our own company is making to supplement and to put into effect the fundamental research study developed in the Forest Products Laboratory.

In the application of these plans which have been worked out in the Forest Products Laboratory to our own business we conservatively estimate that we save from 25 to 45 per cent of the material used in our boxes, which substantiates the statement I made at the start that at least 25 per cent of the material used on boxes and cases can be conserved. We have been operating for about 18 months on this and the saving is continuous and consistent. Those are the results we are obtaining.

Other manufacturers are doing similar work as ourselves, but to a more limited extent; but the associations which I have named are endeavoring through advertising and circulars and pamphlets and lectures to carry this same story to their individual members, encouraging them to know and to appreciate and to apply these lessons which are being so ably presented in the Forest Products Laboratory.

The work has already passed that point, has already reached that point in its development where it is necessary that additional problems which have arisen from the application of the studies be further solved.

There is no other organization in the country except the Forest Products Laboratory which is equipped with the personnel and equipment and the experience to continue this study, and it is because of their importance in that regard that we are anxious that they be adequately supported by Congress.

In addition to having the work hampered and delayed because of insufficient funds, it is equally seriously affected by the loss of the service of its engineers who have been engaged upon that work heretofore.

The services of these trained engineers are being lost because they can not live and raise their families in accordance with the standards

of the community in which they have to live, because of insufficient salary. Those engineers are drawing only from about 35 to 60 per cent as much salary as is being paid for like services among the industrial plants.

They are forced to abandon the Forest Service because of these conditions and to take employment elsewhere.

The work necessarily suffers because of this, and the good which might be accomplished by experience which is not available. This, of course, is lost because of the rapid turnover in the personnel. They are having to utilize most of their funds in training new help to take up this work.

Mr. ANDERSON. That is a problem of many of the departments, and that can only be considered within certain limits.

Mr. QUINN. I presume so, but it is our duty as observers of this condition to lay emphasis on it, as we feel that it is one of the serious problems of the service.

With the salaries of the personnel of the Forest Products Laboratory on a sufficiently liberal basis to minimize the annual turnover it is the belief of those of us who have been following the work, that for every dollar appropriated by Congress for the research work on these problems, there will result a saving of at least \$100 to the industry of this country.

Mr. ANDERSON. I do not question the saving resulting from many of these propositions. I suspect, however, if you went back over the estimates for appropriations for the Department of Agriculture and summed up the savings that are alleged to be made by making certain investigations and carrying out certain preliminaries that you would find that a good many savings are not materialized.

Mr. QUINN. I cited the saving of the canned-food cases in the saving effected in about 90,000,000 cases which was a result of the information that has been furnished as a result of the research work in the Forest Products Laboratory upon an expenditure of less than \$10,000. Those specifications are now being seriously considered by the consolidated classification committee of the railroads as a part of the classification.

Mr. ANDERSON. Is it not a rather strange thing that these savings are possible through this research involving no more than \$10,000 and that some of the industries themselves manufacturing these products have not thought it worth while to undertake?

Mr. QUINN. We thought it worth while. We are spending \$20,000 a year to supplement the tests which have been made by the Forest Products Laboratory ourselves, and in carrying out the problems which they have worked out and are applying them for the benefit of our customers.

Mr. ANDERSON. I am very glad to find that somebody is doing that, but there is a pitifully small number of people sufficiently interested in their own business to undertake the solving of some of these problems which seem to me rather of a more individual than a national problem. I say that in the kindest spirit without any desire of criticizing.

Mr. QUINN. The uses of boxes and crates, of course, is a national use. Every industry, as I said before, in the country uses them. They directly affect the cost of the goods to the consumers.

The association did not minimize their work, and that is why they are willing to appropriate funds to continue this work in the Forest Products Laboratory. They are spending lots of money in acquainting the members with what has been accomplished, to get them to appreciate the value of what has been accomplished and in teaching them how to apply the benefits and helping the box makers themselves. The box makers themselves do not profit most from this work, because they pass it on to their customers in cheaper packages. This work does result in economies, and in savings, and is being considered by the railroads, the proposition of putting these standards in the classification, as the minimum under which they can ship goods, and there are a number of the standards now in the classification and more going in every year.

We believe that this research study in the Forest Products Laboratory, the creating of minimum classifications which can be used for packages carrying certain commodities, can be done more effectively by them than any other agency. And when they create a standard, it does mean a better package and a cheaper package for the consumer.

The industry which I represent wishes to urge upon the committee the problem of fixing a more adequate compensation for the engineers for the Forest Products Laboratory, and wishes the committee to give that matter sympathetic consideration.

They appreciate that other things enter into the appropriations besides, but we wish you to give that very sympathetic consideration, and pay a salary similar to those paid in the industry. Nevertheless, all that we can ask for is that you give that the same sympathetic consideration that we would have you do.

If there are any other questions, I would be very glad to answer them, if I can.

Mr. ANDERSON. Can you give us any figures as to what your association is spending in supplementing the information that has been furnished to you by the Forest Products Laboratory?

Mr. QUINN. Yes, sir; the National Association of Box Manufacturers have increased their dues—increased their dues last year—raised their dues from about \$25,000 to about \$85,000 a year. The total increase is to be spent in this additional campaign—possibly \$50,000 for one box association. One box association, which is a smaller organization, having only about 25 or 30 members, is spending this year approximately \$20,000 in the same campaign of education.

The Egg Case and Egg Case Filler Manufacturers' Association have only one product, which is standard now, and is covered by the railroad classification committee, so there is no opportunity for them to apply this research study for the benefit of their own customers.

Does that answer your question?

Mr. ANDERSON. Yes, sir; thank you.

Mr. QUINN. I thank you very much for the opportunity of appearing before you.

Mr. GREELEY. Mr. Chairman, I appreciate very greatly the patience and consideration which you have shown during this hearing, and I do not want to wear out altogether—

Mr. ANDERSON (interposing). Well, maybe we consider that it is cheaper to hear you than it is to give you the money.

Mr. GREELEY. If we do not get enough, we are sure to come back for more.

Mr. C. J. Hogue, of Seattle, is here, and he comes to Washington for the purpose of these hearings. I would be glad if you can give him five minutes.

Mr. ANDERSON. Certainly; we will be glad to hear him.

**STATEMENT BY MR. C. J. HOGUE, MANAGER WEST COAST
FOREST PRODUCTS BUREAU.**

FOR EXPERIMENTS TO PROMOTE ECONOMY IN THE USE OF FOREST PRODUCTS.

Mr. HOGUE. The West Coast Forest Products Bureau, which I represent, has been recently organized as a market-service connection between the owners of the lumber and the manufacturers and wholesalers of Douglas fir on the western coast. This is in the interests of the wood-using industry, the work which the Forest Products Laboratory has been doing, and it has been so great so far that the lumber manufacturers themselves consider it of great help, and they think that there is more need for research.

The lumber industry is largely coming to appreciate the service which the laboratory is rendering. This was illustrated in the organization of the Forest Products Bureau. With the average wholesaler of the west coast, the one question which was asked when we were forming the bureau was whether the bureau proposed to carry on any research work, and if so, would it be done in cooperation with the Forest Products Laboratory.

The Forest Products Laboratory is our principal source of authority for information regarding the principal uses of wood and in many cases it is our sole authority and we depend on it very greatly in the lumber industry.

Lumber is not a product which depends upon the processes of the materials which go into it, such as cement and steel, which depend for their whole manufacture on technical laboratory work. The chemical composition of wood substances does not vary very materially, but there is a great variation of the moisture content, which controls the strength and defects, the knots, and other defects which have effect upon the strength of the lumber, and which must be taken into consideration. And we are attempting to adapt ourselves as well as we can to the use.

So that the study of lumber in its raw state and its best uses represent a great possibility for saving and the more efficient use of our forest products which is becoming increasingly difficult to obtain, which is becoming an increasingly difficult problem as to the source of supply.

Mr. Quinn told you what had been the result of the research in connection with the box-making industry, that the amount of lumber which goes into the boxes has been reduced by the addition of a few nails in a box, which made it materially stronger and enabled them to produce the boxes at a materially less price. There is great need for wood with stronger breaking strength in two directions, and to the development of ply wood the Forest Products Laboratory can ascertain whether or not it can be made equally strong in two directions instead of strong in only one direction.

The development of more water-resistant glues has enabled us to develop a wood that would be as strong in both directions, with the possible exception of when long exposed to the weather and moisture, when it may possibly not be. And the research in connection with the manufacture of pulp and its derivatives will offer us an opportunity to utilize a part of the two-thirds of the tree which now remains in the woods.

There is still much to be learned or much study to be done in the United States Forest Products Laboratory, and at the present time the work of the laboratory is at least so thoroughly appreciated that practically all of the Government appropriation is used in extending service to those who call for it, call for the information which has already been gathered, and very little money is available for further research at the present.

And with regard to the point which the chairman brought up, the question as to whether or not these wood-using industries themselves should not do this research work, but lumber manufacturing and the wood-using industry as a rule is carried on by rather small units. No one unit could afford to put up the money required for any great amount of research, the result of which would be to the benefit of all the other plants and concerns.

Another point to illustrate the value: Recently in New York City they were asking for a change in the working values assigned to Douglas fir in the New York building codes. A representative of the laboratory appeared to discuss the matter. One of the first questions put to him was, "Whom do you represent?" And when he told them that he was connected with the laboratory, they wanted to know whether the expenses were paid by the industry or whether it was entirely Government supported or whether the bureau was wholly supported by the lumber industry, and his being able to tell that committee that the work which the laboratory did in determining the uses and timber values was supported entirely by the Government gave his testimony a weight before that committee which it could not have had or which would have been very materially diminished if he had not been able to make that statement.

I think there should be cooperation between the manufacturers, the wood users, and the laboratory; but I think that the cooperation should only be in connection with researches of special projects, but that they should back up and support the laboratory. And I think that this authority should come from the Government, and that is, I think, the reason for asking for an increased appropriation at this time for the work of the laboratory. The work of the laboratory is essentially a conservation measure, and every dollar spent through the laboratory comes back manyfold to the very widely distributed users of the forest products.

And the work of the Forest Products Laboratory has been indorsed most heartily, and we hope very sincerely that you will be able to grant what it is asking for at this hearing.

Thank you.

Mr. ANDERSON. Thank you. Are there any questions?

Mr. GREELEY. I would be glad if you would hear Mr. Kellogg.

STATEMENT OF MR. R. S. KELLOGG.**ACQUISITION OF FOREST LANDS.**

Mr. KELLOGG. Mr. Chairman, you made the statement that talk was cheap. I am going to challenge that statement that talk is cheap. In the first place I want to——

Mr. ANDERSON (interposing). Well, I did not make that statement, but if you want to challenge it, go ahead; I will be glad to hear you.

Mr. KELLOGG. With regard to the proposition of whether or not talk is cheap, there was a lot of talk last year that was cheap. I thought you made that statement.

Well, in the first place, I want to speak to you as the representative of the eight organizations which I spoke to you as representing this morning. I want to go on record for those eight organizations; in addition to being very strong in urging the passage of this appropriation for the Forest Products Laboratory, I want to go just as strongly on record for the indorsement of the appropriation for the purchase of land under the Weeks Act as anybody can speak. I want to say that we are very strongly, all of us, back of the proposition for the acquisition of forest lands.

And we also want to be placed on record, those eight organizations, on this question so far as the Forest Products Laboratory is concerned.

On this question that talk is cheap, Mr. Chairman, there has been running through my mind all this afternoon this one thing, and that is that some 20 years ago, about 20 years ago, a very large conference report was made to Congress upon the question of acquiring land in the Southern Appalachians for the national forests. That was 20 years ago, and Congress at that time had sufficient information, there was sufficient information placed before Congress upon which Congress could have and should have based a permanent acquisition policy at that time. That land at that time, with all of that valuable hardwood standing upon it, could have been purchased for an average of just about \$5 per acre. But instead of doing that they delayed the purchase of that timberland for 11 years, before the program was started, notwithstanding the fact that Congress had information upon which to base an intelligent policy. And, when the program was started, 11 years later, we purchased in the following eight years 1,800,000 acres of that land at an average cost of \$6.24 per acre, and over 90 per cent of it was cut-over land. There was a very small amount of the original timber standing.

And I submit in that case, Mr. Chairman, talk was not cheap. That was about the most expensive thing that we have ever done, and that certainly illustrates that talk at that period was not cheap.

And exactly that same thing is taking place now. And with regard to these matters, we think that talk is not cheap. And that is the reason why this national forest products committee, representing these eight national organizations of manufacturers of timber, of users and consumers of forest products, have determined upon this permanent policy that they want to present to Congress here. There have been only three situations brought up this afternoon.

We are going to submit these things to Congress, and we are going to keep on demanding them again and again, and we are

demanding them in the interests of the future welfare of this Nation and for the establishment of a permanent policy for the protection of the great natural national resources, a plentiful supply of which means so much to this Government.

Now, I just want to say a word with regard to the American Paper Pulp Association, as secretary of a committee of that particular organization, on this question of pulp and paper. I doubt very much if there is any industry in this country to-day that is any more important than the pulp and paper industry.

We have had a stone age, then we had a bronze age, then we had, perhaps, a steel age, but if there is any age that characterizes us as any particular age to-day, it is the paper age in the United States, and it is absolutely impossible to carry on a broad democracy such as we have established, stretching from the Atlantic to the Pacific, without paper and pulp and a supply of paper. We use the daily newspapers alone, not including the Sunday issues and the magazines, there are 28,000,000 copies published every day, every calendar day in the year. We used during the year 1920, 125 pounds of paper per capita for every man, woman, and baby inside the continental United States to carry to the people the news and the information without which we could not get along. We use an enormous amount of wood in the production of this pulp, but if we can eliminate the waste there will be plenty of wood for the pulp and paper and for all other uses; but, Mr. Chairman, the thought I have in mind is that talk is not cheap in this connection, and that if action is not taken by this Congress it will be submitted to the next Congress, and the longer that it is delayed just so much more are we going to have to pay for it. The people of this country are going to demand that these things be done, and they can not be done suddenly.

Mr. GREFLEY. Mr. Chairman, the director of the Forest Products Laboratory, Mr. Winslow, is here. I would like the committee to hear him.

Mr. ANDERSON. I think the committee would be very glad to hear Mr. Winslow and hear about the work they are doing out there.

STATEMENT BY MR. C. P. WINSLOW, DIRECTOR OF THE FOREST PRODUCTS LABORATORY.

EXPERIMENTS TO PROMOTE ECONOMY IN THE USE OF FOREST PRODUCTS.

Mr. WINSLOW. The broad observation as to the situation at the laboratory as I see it is this: The timber supply is rapidly disappearing. Three-fourths of the original virgin stand is gone and we are now cutting our supply from the remaining one-fourth from four to five times as fast as our annual growth. We are already noticing the shortage, as evidenced in the high prices and in the increased freight charges.

Now, a good deal of thought and consideration has been given here to-day to the question of removing this shortage by reforestation and increased production. Reforestation takes time, of course. It is a question of many years, the question of reforestation. In the meanwhile we ought to protect what we have. At the present time it takes 3 cubic feet of forest products to get 1 cubic foot of the

finished product. There is a vast amount of raw material, amounting to approximately twice as much wasted as you have in the finished product; that is, in one form or another wasted and is not a part of the economic value. Now, if we can become successful in effecting an economic utilization of such materials we have gone a long way toward solving the shortage.

If we can eliminate this wastage, one tree will produce as much economic wealth as is now produced by three trees. And that leads to many broad possibilities in relation to the industries using wood and for their future supply and to the economic reforestation and the whole question of growing timber nationally and protecting it.

Now, at present the Forest Products Laboratory is the only institution where a trained, coordinated, and correlated organization with facilities is engaged upon studying some of the problems incident to a thoroughly developed utilization of the enormous amount of material which is now being wasted, which has been very effectively brought out and previously discussed by the other gentlemen here. I will not attempt to go into that.

Of course, it comes back, from your standpoint, to the question of whether or not this work is accomplishing anything, and whether it pays to put money into this research with the hope of arriving at some of these things and enabling us to utilize methods which will pay.

Some of the possible savings have been brought out here to-day, and it has been pointed out that it does pay an increased saving in one national industry. I could cite many more of them, but it is too late to take up the time of the committee. However, I want to mention one concrete case that I think is very interesting.

We have been carrying on for some months a study having to do with the elimination or the development of methods which will eliminate the decay in wood pulp in storage, and in pulp wood in storage, and in following up that experiment, which has been made possible by contributions raised by about two dozen paper companies who became interested in the subject, we made a test at a large paper mill, where we took a given quantity of pulp wood in their yard which had been stored under normal conditions, and had been in the yard for some 18 months, and represented what they normally used, and at the same time some fresh material came in, which was perfectly free from decay, or as free from decay as any materials could reasonably be expected to be.

We took a given quantity of that by volume and turned it into pulp, and measured the quantity of pulp secured in each case. Then we made a very thorough test, taking the pulp from the wood which had been stored and the pulp from the fresh supply, and we found that the pulp from the fresh wood was better than the pulp from the decayed wood. And we made tests over the machine of the finished paper, and so on, and we applied the value of the paper, and we found that there was a loss in the production with the decayed material as compared with the good material which amount at the sale value to \$2,500 per day for that one plant, which is possible, with an increased production, that might be secured if all material had been solid, with no greater expense for overhead or operating charges.

Now, I do not mean to say that it is possible that that mill will suddenly start saving \$2,500 a day, but that test was sufficient that they started in to modify their methods of storage, their storage conditions, and their storage houses for their pulp, as well as their yard arrangements for the wood.

And that is an indication of how that goes. Now, certain other companies are watching that thing and are falling in line, more or less, improving their own conditions. And, as time goes on and more and more of this information is gotten across to the paper companies—the result of our tests are printed in pamphlets and given to them, on this situation—you will see that situation improving as a result of those tests.

The question was brought up and discussed in part as to the desirability of this kind of work being done by the Government, or whether it ought to be done by the industries themselves, and why it is not done further by the industries. I think that is a very pertinent question, and I believe that the wood-using industry as a whole could well develop their wood research activities to a much greater extent than they have along the lines that is being done by the company which Mr. Quinn represents. His company is doing that, and some others are coming along and doing certain types of this work.

There are certain types of this work that I think we can probably interest the industry to undertake. I might say that I think we ought to do the more fundamental long-time research work that is required, which requires a large outlay of equipment and money and requires a long time to get results, with some uncertainty as to just how or what specific value or result might be secured.

Now, with reference to the box proposition again. It would have been impossible for us to have done the box work that we did within the time we did if certain data had not already been gathered. That work involved the use of 35 or 50 different woods. If the groundwork had not been in the process of being gathered during the five years previous, and we had not been studying it and building up that information, it would not have been possible for us to have completed that work within the time we did. We had to make studies with regard to the nail-holding power and the result of splitting and the causes and all of those factors.

And there are elements I think which will always prevent the industry from carrying out these studies unless it is an industry as large as a company like the General Electric, or something of that size, that maintains a very elaborate research organization of their own for the handling of the basic materials, or work of that sort.

There is another element that comes into that question and that is the question of neutrality, or lack of bias as to the results. Mr. Hogue referred to that in the case in regard to adopting standard values as to timbers, and the work that had been done in the laboratory enabled us to recommend for the building code of New York a higher strength value to be used. And the question was very seriously brought up as to who paid for the work which had been done, and whether the engineers were responsible to the Government or not. I think that is a perfectly good point to illustrate that fact.

Those three points illustrate the degree to which our cooperative work can be developed.

Many companies want certain work done involving testing that we are able to undertake with them, and sometimes they may be very willing to pay for that work, but it may be of a nature so intimate, so specific for their business that they wish to control the results, and keep the results to themselves.

Now, being a public institution, we naturally are not able to undertake cooperative work of that nature and wherever we do cooperative work with any association or company we insist upon the power of controlling the data and the conclusions drawn from it, and the demonstrations and publications which result from it or the control of them rests primarily with us, and that we are to use it any way we think best, at any time. And, you can readily see that means that a certain type of work can not be undertaken by us where a company expects to cooperate with us on the same basis.

Mr. ANDERSON. Well, do you expect to receive financial cooperation from outside firms?

Mr. WINSLOW. Well, outside firms and associations, in one form or another, have put up between forty and fifty thousand dollars this year.

Mr. ANDERSON. And it is given to you for the purpose of making certain specific investigations or simply along general lines?

Mr. WINSLOW. No; this is for specific work, like the wood-pulp-data study, where 25 companies put up a certain fund for use in carrying on that work, and it must be used for that purpose.

There are one or two other studies, fields, that have been mentioned here, that I want to bring out further. One, particularly, has to do with the utilization of smaller pieces of material in building up a large timber.

Now, if you can have a glue, an adhesive that is strong enough and is durable enough, as durable as the wood itself, there is no objection, that I can see, to the utilization of small sizes of materials to make large-sized timbers and to build up or fabricate large sizes of stock. If that can be pushed further and is found successful—looking to the future and the use of the small timber, rather the handling of the small sizes, etc.—that will have a great deal to do with the elimination of waste, to which Mr. Babbitt has referred. There is a very broad possibility for effective work along that line. It will depend particularly upon the adhesive.

Now, we have already developed, through war experimentation, a good glue that, from a mechanical standpoint is satisfactory and it fairly water resisting, but not enough so for a permanent structure, where a bridge or something of that kind is concerned; and, of course, we have no way of arriving at what the strength is going to be 10 or 15 years from now. Studies along that line should be carried forward and developed, because, if found satisfactory, it would ultimately result in a great saving.

There is also a large field for carrying on experiments as to the production of alcohol from sawdust. And the matter of experiments of producing cattle feed has also been mentioned. Experiments are also being made as to the production of a substitute for gasoline. That is very interesting, particularly in view of the fact that we are

liable to need something to take the place of our limited supply of gasoline, as the best information I have received would indicate that an acute situation is going to develop before a great while and the question is going to come up as to how we will alleviate the situation. That matter is now receiving very serious consideration by one of the large automobile concerns. They are carrying on extensive investigations as to the development of a fuel for gas engines.

It is very efficient and is one of the big sources of supply that could be found, and that could be developed from this waste sawdust, and it would open up a demand for it that would result in the sawdust being used for that purpose instead of being wasted, and the crux of the situation would depend upon how far we can go toward reducing the cost of production. It is a problem I think that should have further research work done on it, and if carried along will enable us to determine the amount of alcohol which a given amount of sawdust would yield, as well as certain other products, which would be valuable information a few years hence if gasoline jumps up too much.

Mr. ANDERSON. I recall hearings held some years ago on the general production of industrial alcohol and from those hearings I gathered the information that the use of alcohol as a motor fuel involved the construction of a motor designed especially for the use of alcohol as a fuel.

Mr. WINSLOW. It is my understanding that the engine has to have a higher compression than an ordinary automobile engine at present. But they are also working on the possibility of mixing it with gasoline. Those experiments are being carried on by one automotive concern. They are carrying on extensive research work along that line.

At present nobody is carrying on experiments on the question of producing alcohol the cheapest way possible. Some experiment has been carried on as to using sawdust for cattle feed.

Mr. ANDERSON. Is it any cheaper to produce alcohol from sawdust than it would, for instance, be to produce it out of waste potatoes?

Mr. WINSLOW. Well, I can not say whether it is or not. I know that they are making alcohol from sawdust. There is one plant that is making well over a million gallons a year in the State of Louisiana, and it seems to be very profitable. They do not give the actual cost figures, but they appear to be able to produce it in competition with other materials.

Just one point more on this: If we are able to eliminate waste from the industries interested in this, what I mean is that if we are able to develop plants which will utilize the material and eliminate the waste, and that can be developed more effectively along economical lines, that means that the timber owner can get more value out of his timber when he cuts it and if it is carried along far enough it may bring the situation of growing timber to a point where it will become a profitable business rather than what it has been in the past. It is difficult to show any profit in the growing of timber, such that a business man would want to put his money into, or such that would cause the business man to put his money into the growing of timber. Now, if we can develop this thing far enough, it may be possible that it would become a profitable thing for a business man to grow timber.

That is an important phase of the situation.

Now, I have probably talked too long.

Mr. ANDERSON. Go ahead.

Mr. WINSLOW. Unless you have some questions to ask, I do not have anything further along that line.

I can say that I have been at the laboratory ever since it was first initiated—in fact, before it was initiated. I started in with experiments out there in 1910, when it was just a hope, I might say, and I certainly hope that the members of the committee will, in dealing with us this year, be kind enough so that I may not find myself in a position where the laboratory will become only a memory with me.

Mr. ANDERSON. Is there anything further?

Mr. WINSLOW. Nothing further. Mr. Chairman, except to thank the committee for the consideration they have given us in granting us this special field day.

STATEMENT BY MR. WILLIAM L. HALL, OF CHICAGO, ILL.

ACQUISITION OF FOREST LANDS.

Mr. HALL. There is one further point, Mr. Chairman, upon which I would like to say just a word. In doing it I especially represent the former Chief of the Forestry Service, Col. Henry S. Graves, who is now out of the country and can not appear before the committee.

If there was any one thing which came out in the hearing to-day, it is, I believe, that we are facing a very serious problem in our timber situation, a problem that must have constructive and careful consideration not only on the part of the industry of the country and the State, but also on the part of the Federal Government itself. In the solution of that problem there is one organization that stands out very boldly in the purchase of lands, and that organization is the Forestry Service.

Without the ability to lead, I do not see how we are going to accomplish anything; without the ability to lead on the part of the Forestry Service, I do not see how we are going to make any real gain in the directions which we have been considering to-day, either encourage the State and the lumber corporations to cooperate with us in the matter of fire protection or in the purchase of land and the building up of the Federal forest reserves. In the Forestry Service, the same as in any other direction, you have got to have some one to lead, and that is true with the Forestry Service.

It was especially in the mind of Col. Graves that the Forestry Service was suffering and has for years suffered because it was unable to hold in its organization the men who could be depended upon to furnish the thought and the leadership that is required in that organization. And so in closing this statement I want to say that, for Col. Graves and for myself, as a former member of the Forestry Service, we want to ask the committee's fullest cooperation with the Secretary of Agriculture in keeping the Forestry Service ready and able to meet this big responsibility which lies just ahead of us. I thank you.

Mr. ANDERSON. If there is nothing further to come before the committee, we are very much obliged to all of you gentlemen for appearing here to-day, and the committee will take a recess until 10 o'clock to-morrow morning.

FRIDAY, JANUARY 7, 1921.

FOR ACQUISITION OF LANDS AT HEADWATERS OF NAVIGABLE STREAMS.

STATEMENT OF HON. JOHN Q. TILSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CONNECTICUT.

Mr. TILSON. Mr. Chairman and gentlemen of the committee, I am not going to discuss the merits of the proposition at any length, but simply wish to express a very deep interest in this matter for several reasons, some of them sentimental, to be sure, but nevertheless persuasive. I am interested in both the New England and the southern Appalachian end of this proposition. The act under which this appropriation is authorized was the first one in which I took a real active interest in having passed. I think it was my first term in Congress—the Sixty-first—when it was passed, and I took a very active interest in it at that time. Looking on the map, opposite page 14, I find almost in the middle of that map by birthplace entirely surrounded by territory recommended by the commission for purchasing. I have been away from there more than 32 years, so that it is a matter of sentimental interest to me now. I now represent, in part, the State of Connecticut, over whose territory flows the great Connecticut River in its lower stretches. In the early spring we sometimes feel the force of the accumulated water supply and wish there were more forests to hold it back and not let it come down so rapidly. We also have some excellent water power which is benefited by a regular flow. We realize, although we have no public forests in the State of Connecticut, that we are benefited, or are liable to be injured, as the case may be, by reason of the steady flow or overflow of the Connecticut River. A little later on I hope you will hear my friend and neighbor, Mr. Charles W. Whittlesey, who comes here as the accredited representative of the New Haven Chamber of Commerce. This organization is located in a city, to be sure, but it represents the real interests of the State of Connecticut as the broad-minded men of that organization see them. These men are deeply interested in this matter and they have sent Mr. Whittlesey here to appear on behalf of their organization. I hope you will hear him later on.

Mr. ANDERSON. We will be glad to hear him.

TUESDAY, JANUARY 4, 1921.

TRANSPORTATION OF PERISHABLE FARM PRODUCTS BY REFRIGERATING CARS, ETC.

STATEMENT OF MR. J. C. FOLGER, ROCHESTER, N. Y., REPRESENTING THE INTERNATIONAL APPLE SHIPPERS' ASSOCIATION.

Mr. ANDERSON. What is the item in which you are interested, Mr. Folger?

Mr. FOLGER. Item 75.

Mr. ANDERSON. Bureau of Markets?

Mr. FOLGER. Yes, sir; Bureau of Markets. The work under preservation of fruits and vegetables in transportation and storage.

The International Apple Shippers Association is composed of approximately 850 of the leading fruit and vegetable shippers of this country. It is one of the largest of three trade organizations, which have an estimated tonnage of approximately 500,000 cars. Our membership, Mr. Chairman, includes such organizations as the Hood River Apple Growers, a farmers' cooperative marketing association, which handles the bulk of the apple crop in that section; the Yakima Fruit Growers' Association, of the Yakima Valley, Wash., and many similar organizations, together with shippers, dealers, and handlers of all kinds of fruits and vegetables in practically every State in the Union.

As our name implies, we are primarily interested in the marketing of apples. However, our members handle and ship over 150 different kinds of perishable food products. We are therefore vitally concerned in any investigation which affects the fruit and vegetable industry, and in urging the support of this committee for this particular investigation we should like to state that we have no special interest in this project over other projects dealing with the fruit and vegetable industry except as is urged by the importance of this investigation.

We have been deeply interested in this work for many years. We have felt it has already resulted in a distinct saving of many hundreds of thousands of dollars to the industry. It has been estimated that last year our apple shippers in the Northwest lost \$3,000,000 because of the lack of an adequate heater car to move apples from the Northwest through the cold States of the Dakotas, Minnesota, and Montana to the eastern markets. This loss occurred after the crop had been grown, and after the expense incident to production, harvesting and marketing the crop had already been borne by the shippers. The only protection that is provided against the rigorous weather encountered in these northern States is oil stoves placed in the cars. These heaters are entirely inadequate. One particular member of ours, an organization which shipped 1,500 carloads of apples had 500 cars frozen in transit; that is, 500 cars that had been grown, harvested, and loaded on the cars, and the freight paid on them. The actual damage was \$200,000 to that one member of our organization, and the consequential damage was probably \$200,000 more. If any of you have ever tried to collect a claim from the railroads you will realize the shippers and growers of these commodities are primarily affected, because they can never recover the loss of money they have put into these crops, and at this particular time every dollar counts. It is disastrous for the shipper to lose the money invested in the production of a crop, once it has left the point of origin. We feel that \$75,000 would not be an excessive amount to apply to this one particular problem on one crop in one region of the country. This example is illustrative of conditions affecting the transportation of perishables in all parts of the country. I realize this committee is continually importuned for appropriations for various projects, but I feel impelled again to state that the members of our association handle 150 different kinds of perishable food commodities, and therefore their perspective is not restricted and their interest is not confined to any one project, except as the importance of that project may urge it.

There are one or two other phases of this work to which I wish to refer briefly. The export traffic as affecting the apple industry is vital; it is our safety valve. During this particular year we have produced a very large crop of apples and our export demand was an exceedingly important outlet. The storage and transit facilities on ocean transportation of perishables are entirely inadequate. There has been very little improvement since the time when apples were first exported. Last fall our members exported pears, apples, and various other fruits which left the Atlantic seaboard in perfect condition, and yet arrived in a decayed condition on the other side, sometimes a total loss. Now, this important factor in our distribution can not be overlooked; we must develop and extend our export and foreign trade. Yet if shipments which leave this country in good condition are a total loss on the other side, it makes that traffic entirely too hazardous, too speculative, for the growers and shippers on this side to contemplate an extension of the markets. Furthermore, if the products arrive on the other side in a decayed condition, there is a lessened demand for them, and we must have improved storage and transit facilities for our ocean-going traffic. We think that \$75,000 is not an excessive amount for that one project alone.

Mr. ANDERSON. On what do you base that?

Mr. FOLGER. We base that on a loss of 25 per cent.

Mr. ANDERSON. I know; but we are constantly confronted with losses here and what I want to know—you say you think \$75,000 is not an excessive amount for this investigation of overseas refrigerator space——

Mr. FOLGER. Yes.

Mr. ANDERSON. And I want to know on what you base that statement.

Mr. FOLGER. We estimate that 25 per cent of all the overseas shipments are lost for want of adequate protective service in transit. This year we estimate that there will be at least 2,000,000 barrels of apples exported. That would represent a loss of 500,000 barrels of apples which, valued at \$6 a barrel, would be a loss of \$3,000,000.

Let me trace this out a little further. The citrus industry in California was experiencing a few years ago a 25 per cent loss in the movement of the citrus crop, through improper physical handling. As a result of improved methods which have been worked out by the Department of Agriculture, they have reduced that loss to 2 or 3 per cent. The same thing can be done for the ocean transportation. I may say that the Canadian Government is far ahead of us in this respect. They have instituted an investigation and have installed self-registering thermometers in the steamships. An extended study of the storage in transit problems as affecting ocean transportation has improved their service. If we are to compete with Canadian apples it is absolutely necessary that we have improved storage in transit, and there is only one place we know where such investigations can be carried on successfully, and that is by the Department of Agriculture.

Mr. ANDERSON. Do you maintain any research department in any of your organizations?

Mr. FOLGER. No, sir. We feel that the Department of Agriculture, as an unbiased and impartial organization, is better qualified to carry on these investigations.

tions. It is necessary to have the cooperation of the shippers, the railroads, and the producers—all the factors interested in this industry—in order that we may have the best results. We want impartial and unbiased investigations. If we were to undertake them we would be exposed to the criticism that we were biased; similarly, if the carriers were to make such investigations they would be open to the same criticism. I think it is a generally accepted principal that scientific investigations of this kind must be carried on by scientific and trained men who are unprejudiced. If they are paid by an interested industry, naturally their attitude would be more or less influenced, and we feel there is only one place to go—that is to the Department of Agriculture. The Department of Agriculture would be losing a distinct opportunity to render a real service unless these investigations are made.

There is being developed an export trade from the Pacific coast via the canal. This involves a longer haul. If we can not move perishables from the Atlantic coast to England and the European ports, it is perfectly obvious that the longer haul is much more hazardous. Now, if we can effect a saving in the transportation cost by shipping through the canal, it is going to greatly benefit the industry and at this particular time it is highly important that we consider every item in the cost.

I may state that there are many problems that should be taken up by this project. We feel that they are doing the important work, that they are concentrating their efforts upon the most vital needs of the industry. For example, it has been estimated that 50 per cent of the sweet-potato crop is lost annually on account of inadequate storage, a loss approximating \$25,000,000. I want to emphasize losses of this kind. It is necessary that we have proper storages to handle these perishables, and storage is a scientific problem which only technical men can study constructively. Our growers in the Northwest have been instructed by the specialists in the Bureau of Markets, and have built their storages according to the recommendations given and have effected very great savings in the handling of their crops.

As a former employee of the Department of Agriculture and one familiar with the work in this storage and transportation investigation, I want to pay especial tribute to those men. Since the time when Mr. Powell, who is now manager of the California Fruit Growers' Exchange, inaugurated the work, the personnel has been characterized by unusual efficiency. We feel they are doing very important work, and we want to urge as strongly as it is possible to urge that adequate support be given to this particular project, which is of vital concern at this time. The traffic involved represents probably 1,000,000 cars of perishable foodstuffs. It is a public problem; it is not a local problem; nor is it a problem that affects just one industry.

It affects every consumer of perishable foods in this country. I may say the storage and transportation of fruits and vegetables constitutes the weakest link in our entire perishable-food industry. There are refrigerator cars masquerading to-day as a protection against heat and cold, which are a menace to every pound of foodstuffs that they carry. This is a vital problem which concerns everyone. It affects the cost to the consumer and the profit to the farmer. This project in the Bureau of Markets has developed and has drawn

up specifications for a standard refrigerator car which, if followed, would effect a saving of hundreds of thousands of dollars. They have already gone that far, but much remains to be done. They have brought their investigations to a point now where immediate and important results can be expected, and we earnestly urge that this committee give very careful consideration to this project and allow the appropriation that has been suggested here.

I believe that concludes my remarks.

Mr. ANDERSON. We are very much obliged to you, Mr. Folger.

Mr. FOLGER. Thank you very much, sir.

INCREASED APPROPRIATION FOR STUDYING METHODS OF DEHYDRATING MATERIALS USED IN FOOD, ETC.

STATEMENT OF MR. AUBREY J. PARODY, REPRESENTING THE NOCAN SOUP CO., 15 PARK AVENUE, NEW YORK, N. Y.

Mr. ANDERSON. You may proceed.

Mr. PARODY. Mr. Chairman and gentlemen of the committee, I am here as the representative of the manufacturers of dehydrated products of the country. In my opinion, the dehydration of vegetables is being rapidly recognized as one of the principal solutions of the food problem of the Nation.

The manufacturers of dehydrated foods in the past few years have made great progress by the development and standardization of their products solely and entirely through the cooperation and support of the division of dehydration of the Department of Agriculture. I feel that this industry means a great deal to the people of the country. It means the reduction of the cost of foodstuffs and the stabilization of the crops of the farmer and the conservation of the greater portion of the amount of vegetables and fruits that annually go to waste, which amounts to practically 50 per cent of the crops produced.

I am here now to urge the granting of the appropriation which is asked for by the division of dehydration, because without their support and cooperation, in the way of research work and study, the manufacturer would be in practically the same position that he was in up to the time that the bureau was created.

There is a great deal to be accomplished as yet, as I understand, in the way of development so as to perfect the dehydration of vegetables and fruits to such a point that they will stand up much longer than they do now and a great deal also has to be accomplished in the way of standardizing the qualities of the different products, such as vegetables and fruits, etc.

We believe that this is a very important matter that concerns all the people, and I am here as the representative of the manufacturers of dehydrated vegetables, as I have said, to urge the passage of this appropriation. We believe this matter is of importance to 110,000,000 people, and should have the support of the gentlemen of the Congress.

Mr. BYRNES. Do you represent any association of manufacturers?

Mr. PARODY. We have no association; there is no national body.

Mr. BYRNES. Whom do you represent; are you engaged in the business yourself?

Mr. PARODY. Yes, sir. I am here and the representative of the Nocan Soup Co., of New York City. I feel sure that the gentlemen from the Bureau of Chemistry have already or probably will give you the information desired relating to the technology of the industry.

Mr. ANDERSON. How is the material put up now?

Mr. PARODY. In cartons. I happen to have a package here. This [indicating] is a dehydrated vegetable soup. The contents of that package will make 2 pints of soup.

Mr. BYRNES. It will make 2 pints of soup?

Mr. PARODY. Yes, sir. By these dehydrated products you get away from the high price of tin cans, wooden packing boxes, and the cost of the transportation of large quantities of water.

Mr. BYRNES. How long will this soup remain in good condition?

Mr. PARODY. Under ordinary conditions, if it is kept in that package and not exposed to moisture, it will stand up at least one year, without any deterioration in flavor, quality, or food value.

Mr. BYRNES. How long have you been in the business of producing this product?

Mr. PARODY. The Nocan Soup Co. has been organized for four years. We have had some of the product on our shelves from the time we commenced that has not been affected by time or even climatic conditions.

Mr. BYRNES. It has not lost its taste or its natural qualities by reason of the four years?

Mr. PARODY. No, sir; it has not. We had some go bad in the very beginning, but that was due to the way it was prepared at the time. The division of dehydration has developed the industry to such an extent that we have no more trouble along these lines. In other words, the keeping qualities of dehydrated vegetables depends principally upon the moisture content. If the moisture content is reduced to about 10 per cent it will last indefinitely.

Mr. ANDERSON. I got the impression from one of the gentlemen from the bureau that it was a question of the character of the container.

Mr. PARODY. That has an important bearing, naturally. That container there I consider as good as we can get, except that an improvement may be made by packing in a round container. This was suggested by the chemist in charge of the division of dehydration. In his opinion a round container would not permit the entrance of any insects from the outside and could be closed tighter. You will note that the contents are wrapped in paraffin paper and then packed in the box. We propose, however, to send all of these packages forward to the dealers with an additional paraffine paper wrapped on the outside, such as you see on Kelloggs Flakes and other commodities of that kind.

Mr. ANDERSON. This estimate of the department that you are contemplating not only provides for certain investigational work connected with the dehydration process, but also certain propaganda work connected with putting this out to the trade and developing the public idea of its nutrition, etc.

Mr. PARODY. Mr. Chairman, with regard to that phase of the question, I want to say that it is all-important, for the reason that

there is a general prejudice that exists against all dry foods. I find that prejudice in a great degree in the minds of the heads of many departments and bureaus of the Army and Navy. I have been here two or three months endeavoring to introduce these dehydrated foods and it has been amazing to see the general prejudice that exists against dried products. I believe that the manufacturers of the United States could spend millions of dollars per annum in a country-wide campaign of publicity to educate the masses and consumers as to the merits of dehydrated foodstuffs and it would accomplish but very little. On the other hand, a nation-wide propaganda which may be inaugurated by the Bureau of Chemistry of the Department of Agriculture, I believe, would have a compelling effect upon the minds of the people and is the only thing the manufacturers can hope for, to get the consumers and the people interested. If such a thing can be made possible, I urge that it should be done, that is, to have the Bureau of Chemistry publish articles and statements from time to time as to the merits and possibilities of dehydrated-food products. I believe that something of that kind would mean a good deal along economic lines to the people, because this [indicating] can be served on the table at a much less cost than the fresh vegetables or canned goods.

Mr. RUBEY (interposing). What does a package like that retail for?

Mr. PARODY. I do not know. The wholesale price on that is 11 cents. I presume it would sell for about 2 for 25 cents or something like that.

Mr. BYRNES. Wholesale for 11 cents and sell for 2 for 25 cents, that would be quite cheap?

Mr. PARODY. That is what they figure on in the commissary stores of the Army and Navy. We have not offered our products to the trade as yet. I have succeeded in getting it in the commissary stores of the Army and Navy. In the Army and Navy they tried it out by giving samples of it to the families of the officers and they reported very favorably on it. I have gotten it into some of the United States Public Health Service hospitals and many of the Government cafeterias and they have found it very satisfactory. The advantage of our product is that you can take the package off the shelf and make a delicious bowl of puree or soup in 10 minutes. It saves time, fuel, labor, and storage space and the big item to the average consumer is that it can be kept for a long period without any deterioration in flavor, quality, or food value and there is no danger of botulism or ptomaine poisons.

Mr. BYRNES. You think it would be more profitable than the canned soups?

Mr. PARODY. Absolutely.

Mr. BYRNES. It does not take very long to prepare canned soups, does it?

Mr. PARODY. No; it does not, but when the consumer buys canned soups, they are paying for tin cans and they are paying for wooden packing boxes and they are paying for the transportation of water. Canned foods of all kinds not only contain the water in the original fruit and vegetable but the manufacturers of canned goods usually add more water to them. With our process all the water is taken out.

Mr. BYRNES. What do the canned soups sell for at retail, do you know?

Mr. PARODY. Yes, sir; the Campbell soups sell for 11 cents a pint.

Mr. BYRNES. And this will make two pints for 11 cents.

Mr. PARODY. Yes, sir; ours is just about one half the price, and not only that, gentlemen, although I am not posted on the technology or the scientific end of it, I have been given to understand there is less danger of ptomaine poison or the poisonous botulines from this product than there is from canned goods. The canning industry has advanced to a great degree in recent years, but there always is the danger of ptomaine in canned goods of all kinds, while our products are absolutely free from ptomaine or botulinus poisons.

Mr. BYRNES. You have developed your industry so far that you know it can be put on the market and that it is palatable?

Mr. PARODY. Yes; and it is nutritious.

Mr. BYRNES. Then why should the department go ahead and spend money in a further investigation of it?

Mr. PARODY. The success which we have attained so far has been only through the research work and labors of the division of dehydration, yet there is a great deal more to be accomplished. For instance, we should be able to get a product that is more uniform than what we have. It varies at times and there are other problems that have to be determined upon. The question of vitamins, as I understand, is not yet a decided question. It is claimed that the energy value is there, but the question of vitamins, which is an important element of all foodstuffs, is still an undecided question.

Mr. ANDERSON. You mean whether the vitamins remain after the dehydration process.

Mr. PARODY. Yes, sir; as I understand it, that is still an unsettled question.

Mr. ANDERSON. Is there anything further you want to say, Mr. Parody?

Mr. PARODY. No, sir; I think that about covers the situation. I thank you, gentlemen.

WEDNESDAY, DECEMBER 22, 1920.

DIRECTOR OF SCIENTIFIC WORK.

**STATEMENT OF MR. G. I. CHRISTIE, DIRECTOR OF EXTENSION
WORK, PURDUE UNIVERSITY.**

Mr. ANDERSON. Mr. Christie, will you proceed now?

Mr. CHRISTIE. Mr. Chairman, I was asked by the executive committee of the Land Grant College Association to come down here and say a word for that association with reference to the agricultural bill and the items in it. One item recommended by the Secretary of Agriculture in which the land grant colleges are very much interested is that for a director of scientific work, a new position that is proposed. It is our feeling that such a position filled by a strong man would, perhaps, mean as much for that work as any other one thing that could be done at this time. The work that

must grow and must be supported in the Department of Agriculture is that of research. That is the one thing that needs more and more attention, and as the department takes up research projects and research problems there are bound to be relationships between the bureaus that will require consideration. They will require the direction of some one who knows research problems and research work from the ground up.

Then, again, that work must come more and more into direct relationship with that of the States. At the present time there is really no one in the department who devotes himself to that kind of work. We have the bureaus giving their time to it and directing their attention to it in a general way, but when it comes to coordinating the work of the different bureaus, and when it comes to coordinating the work of the bureaus with that of the States, we do not have anyone in research as we have in extension work. The creation of the States Relations Service to handle all extension activities of the department through one medium, and to make contacts with the States through that medium, has resulted in the development perhaps of one of the strongest extension agencies in the world, and we have certainly the most harmonious relationships and are securing most effective results. I think I am speaking for all the experiment stations especially when I say that we should like very much to see this position of director of scientific work created and the Secretary of Agriculture empowered to get a man who can help out in that big work.

COST OF FARM PRODUCTS.

Now, the agricultural colleges are also very much interested in the work of farm management and farm economics. During the war and since that time there has been very deep interest shown in farm management and farm economics, especially as it relates to the cost of producing farm products. The serious question in the minds of our people—and that means all the people—is that there is no basis for the determination of the cost of farm products. That is something that is difficult to arrive at, and that, again, is the source of the trouble that we are experiencing. I know that it is going to be difficult to arrive at the cost of farm products, but that should not be any reason why we should not attack it. Really, if we do attack the problem and find out that we can not arrive at the cost of producing farm products, it will do as much in the way of clearing the air and getting our people off that question as any other one thing that could be done. That is true for the reason that a lot of people feel that you can determine the actual cost of farm products, and that then the Government can establish a price covering the cost plus a reasonable profit. That is really one of the fundamental questions that is back of this unrest in the minds of our people at this time.

Mr. ANDERSON. May I interject a word there?

Mr. CHRISTIE. Yes, sir.

Mr. ANDERSON. Personally, I do not think that it is possible to arrive at the general average cost of a specific farm product so as to give you a result of much value. Of course, it may give you a statistical result of more or less value. It seems to me that any valuable farm-cost studies must be in the analysis of farm operations and

of the cost of those operations, and their relationship to others, or such studies as will assist in arriving at a better system of farm management in the utilization of equipment, in the better utilization of labor, and in the better relations that are established between labor, equipment, topography, and every other question that enters into farm management. Personally, I do not feel that there is much to be gained by farm production-cost studies directed toward the attempt to ascertain in a general way, for instance, what it costs to produce wheat in the United States. That is only one of a number of operations which the farmer conducts; and what we are really trying to arrive at, it seems to me, is what operations can the farmer continue in his scheme of husbandry and management which will yield him a return on his investment. That is the problem in all other business propositions, and it is the problem that is involved in the question of farm management.

Mr. CHRISTIE. Mr. Chairman, you have given a good farm-management talk. It seems good business to go to the farmer at this time and start in with his thoughts and his ideas, and then direct him toward these more fundamental things of which you have just spoken. For instance, a man who produces 40 bushels of corn per acre can not hope to produce corn as cheaply as the man who produces 80 bushels per acre; and the man who produces pork with a ration of fish meal and corn, as was spoken of here yesterday, and who can produce 120 pounds in 62 days, can produce pork more economically and sell it on the market at a lower price than the man who produces it on corn alone, requiring 148 days to produce the same amount, or 120 pounds of pork. Now, when you come to a study of costs, you bring that man to a realization of that fact, and that is something that has not been done up to this time. Therefore I think that through a study of costs we will get at that factor in a more direct way than we have done in any other studies that have been made. It is impossible to go out and talk this to the farmers, but we have to have some concrete demonstrations made in the communities, where, for instance, our men can go to the farms and for each group of farmers in the community determine, we will say, the cost of the production of beef. Now, we will use that as a center of information where the farmers can come and study the methods employed and study the work done and all the facts relating to it, making it an informational center and a guide to better farm practice. Our people are deeply interested in that to-day, and I always believe that when they are deeply interested it is a good time to go out and talk to them and work with them.

Mr. ANDERSON. I only interjected what I did in the record because of the feeling on my own part that in commencing a fundamental work of this kind, which is likely to go on for a considerable period of time, we have to be very careful that it is projected in a direction that is going to give us useful results, so that 5, 6, or 10 years from now we will not have to retrace our steps and begin the work anew, from the ground up, with the disadvantages incident to a long period of misdirected effort.

Mr. HARRISON. If I may say just a word here, Mr. Chairman, studies such as you have in mind are going on, hand in hand, with the studies of the cost of production of particular products. We

must know the cost of the different farm operations before we can determine the cost of the products, and the farm that registers the lowest cost of operation ordinarily will secure the largest profits.

Mr. ANDERSON. Personally, I do not think there is anything in the proposition of attempting to arrive separately at the cost of producing a given crop.

Mr. CHRISTIE. This work is not now an experiment—that is, as to methods—because for the past two years, under the reorganization of the Office of Farm Management, a small sum of money has been allotted out of the main fund for work on that problem. They are cooperating with our State in the study of the cost of beef-cattle production, and they are carrying it out in the way I outlined a few moments ago. Our beef-cattle men are deeply interested in that work, and I believe they will get the same results in other lines. They are directing the attention of the cattle producers in the State to better methods of production and more economical production. Really that is the big item that we have to face in the next few years—that is, following a system of farming that will lower the cost of production, because we know that the farmer has it in his own hands, and if he does not pay any attention to that factor, he will not get the best results.

Mr. ANDERSON. I think there is a very good example of the result of cost-production studies in the general realization of what it costs to produce in the newspaper business. I do not know whether you are familiar with that or not, but it has only been seven or eight years since there began to be manifested an interest on the part of people engaged in newspaper publishing, and newspaper work generally, including job printing, in the question of production costs. They began to inquire into what it was costing them to produce their product, and the general result unquestionably has been an increase in the price of the product and an increase in the profit to the newspaper man, or a raising in the general average of profits in the newspaper business. I do not think there is any question about that. I do not want what I have said to be construed as a criticism of what the department is doing, because I do not know what it is doing. It may be doing the exact things that I think ought to be done.

Mr. CHRISTIE. I think it is, because I believe you discussed some of those things in former hearings, and there were some suggestions made along this line. I think you will find that a good many of those ideas are being carried out in actual investigations and demonstrations through the Office of Farm Management. This item is asked for by the Secretary of Agriculture, and I simply wish to register at this time the approval of the colleges, and, especially of the experiment stations.

CONTINUANCE OF THE SUPPLEMENTARY EXTENSION FUND.

The other item that we are deeply interested in is the continuance of the supplementary extension fund. We are deeply interested in that this year because of the change in the basis of distribution of the Smith-Lever funds under the new census. The Smith-Lever funds are distributed according to the percentage the rural population bears to the total population. Under the new census many of

the large States, such as Iowa, Illinois, Indiana, Ohio, Pennsylvania, New York, and others show quite a material reduction in the percentage of rural population. That means that even with the increase of \$500,000 that is to be added to what these States are now getting, they will receive very little more than they have been getting this year. If the supplementary fund is allowed and is added to the regular Smith-Lever fund you will find that a State like Indiana will get approximately \$17 in 1921-22 more than she is getting in the present year. I think a State like New York would get approximately—and these are just approximations, because accurate final figures are not yet available—New York would get in the neighborhood of \$300 more this coming year than she is getting in the present year.

Now, should a reduction be made in the supplementary fund such States as Indiana, New York, and several others would be very materially reduced in the amount they would have next year for that work. That work should grow and be increased, rather than reduced, under the conditions which exist, and we feel that this item in the bill should be continued as it is. We are not asking for an increase, because we could get along as it is, but we do feel that it should not be reduced. I say that because we do not feel that we can afford to reduce the work at this time. That item is so well understood that I do not think it is necessary for me to take any further time in discussing it.

Mr. ANDERSON. I would like to say in that connection that the Committee on Agriculture previously considered these estimates and anticipated the possibility of reducing the supplemental fund as the Smith-Lever funds became available. Of course, the committee did not anticipate the change that would occur in the percentages payable to the different States under the Smith-Lever fund, owing to a change in the census figures and the relative positions of the different States under the new census, but the committee will consider that situation in connection with the supplementary funds when we reach the final consideration of that item.

Mr. CHRISTIE. I might say that in the past, if you will remember, you have had some complaint from some of the Western States because their allotments were very small under the Smith-Lever fund. Of course, under this new allotment they will be increased, which I think is very desirable. I think that with those large areas and the amount of work that we must do those States should have an increased fund, and none of our Central Western States are complaining because these other people get more money. I think they deserve it and ought to have it. If it can be continued as at present, it will give our Middle Western States approximately the same amount of money that they had during the past year and we can get along and maintain our organization with that. We believe that it is a very desirable thing, and I would like to urge it on the committee.

Mr. ANDERSON. Is there anything else you wish to discuss?

Mr. CHRISTIE. No, sir.

SALARIES.

Mr. ANDERSON. I want to ask whether or not you would like to discuss the general question of salaries paid in the higher positions of the department?

Mr. CHRISTIE. I should like to say, Mr. Chairman, that the salaries for the higher positions in the Department of Agriculture, such as Assistant Secretary of Agriculture and the bureau chiefs especially, are too low. I do not want to think of them as low in comparison with what is being paid in business or with what is being paid in some other departments of the Government, but they are too low to secure and retain men of the caliber and ability that the Department of Agriculture should have to administer the work that is imposed upon it. You have here the largest bureaus of any department in the world perhaps. The department extends over tremendous areas and deals with large numbers of people and with some of the largest and most complicated problems. Now, if we keep those salaries down to the point where the best men will not accept them, then you can not expect to get the best results for the money expended. I can not help but think of the work that was presented here yesterday by Dr. Taylor in connection with citrus canker. The Government at one time appropriated, if I remember, something over \$400,000 for that work. Now, suppose you have men of medium ability, men who do not know the situation, or men who are not willing to throw their whole souls into it and do the thing in a big way, you can appreciate the risk of wasting a lot of money, of spending a lot of time, and of accomplishing very little for the industry.

That same thing is true all along the line. If you are going to give big appropriations to those bureaus, as you are bound to do if agriculture is to be supported, then I think you have reached the point where you must place in those bureaus the largest and strongest men that can be found in this country. If you are going to ask that class of men to hold these positions, then I believe the Government should be willing to pay them a living wage. I have tried one of those positions, and I speak from experience when I say that you can not live on the salary paid over here. Therefore, rather than fuss about it, I went where I could get a salary that I could live on. When that position was vacated, you know something of the trouble that was experienced in getting a man to come here. Now, I think that the Government should make it possible to pay a wage on which a man can live in the City of Washington. If you do not, you are going to have this great turnover that you have experienced in the last few years, with people coming in and going out all of the time, and the work of the Agriculture Department can not be accomplished in an efficient manner upon that basis. I do not believe that the character of men that you want here at the top of the list are men who would come here just because of the salary, but they are men who are willing to give their life to the work, and the only thing they expect is the opportunity to live in a decent manner.

I just want to register on the part of myself, and on the part of the experiment stations and colleges, the hope and desire that these positions can be raised to a point where the men who are now here will be better satisfied and better taken care of. The positions should be such as would attract men of ability and men who are capable of doing the job that you want done.

Mr. ANDERSON. We are very much obliged to you, Mr. Christie.

FRIDAY, DECEMBER 31, 1920.

URGING LEASED WIRE AND REOPENING OF STATIONS ON THE PACIFIC COAST.

STATEMENT OF HON. H. Z. OSBORNE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA.

Mr. OSBORNE. Mr. Chairman and gentlemen of the committee, I am in full sympathy with the movement for economy in governmental expenditures, but I can not sympathize with the curtailment of governmental service to the public when such curtailment becomes tantamount to public waste, and I am here especially to speak for adequate provision for the Bureau of Public Markets. The bureau has in the past been of very great benefit to the vegetable growers and fruit growers of the Pacific coast, and I have never heard a condemnation of the work of that bureau in the West. It is rather exceptional in the esteem in which it has been held for the great service it has done for the vegetable growers, particularly of the western coast. Now, here in the East, we, who are by circumstances compelled to remain here, depend very greatly upon the vegetable growers of the West and the South for what we eat, and of late years it has been a source of just complaint that the prices of those things are very heavy. I am fully of the opinion that a judicious expenditure through the Bureau of Public Markets tends to a lowering of the cost of such articles to the consuming people, which is largely east of the Mississippi River, and that it enables people to get a better quality of subsistence so far as they depend upon vegetables.

I hope the committee will find it wise to make an adequate provision for the Bureau of Markets, and especially the item of telegraphic service to the Pacific coast. It was cut out from the bill last year, and its loss it felt very keenly. Those who are engaged in the raising of vegetables in California have not the strong cooperative organization that, for instance, the citrus fruit growers have—that is, the growers of oranges and lemons. The California Fruit Growers' Exchange is made up entirely of growers of citrus fruits and not of other fruits. They are sufficiently strong, due to their excellent organization, to take care of these things themselves, but the vegetable growers are not in that happy situation where they can form such associations and cooperate so well. The extent of the growth of vegetables in California is quite surprisingly large. The tonnage of vegetables grown in the State two years ago was 23,581,000 tons, of a value of \$278,000,000, an enormous production, and it appears to me that the proper distribution of them is a matter of governmental concern, and that the providing, as the Bureau of Markets has done in the past, of information as to conditions at the eastern markets is of such public importance, not only to the growers themselves but to the public at large, that you will be justified in making a sufficient appropriation to cover that item. I have some telegrams here from organizations in California that speak understandingly of the importance of the Bureau of Markets and of the leased-wire service, that I will ask to have placed in the record.

Mr. ANDERSON. Without objection, it is so ordered.

Mr. OSBORNE. I sincerely hope, Mr. Chairman, that you may find it consistent, even with the considerations of economy which we all have in mind now, to make this provision for a leased-wire service and for the reestablishment, if possible, of the stations on the Pacific coast—at Los Angeles, San Francisco, and in the Northwest—which existed there until last year.

Mr. ANDERSON. I am sure the committee has a very high opinion of the work that has been done in the past, and that the committee will give the matter their earnest consideration.

.(The telegrams referred to follow:.)

From the Los Angeles Produce Exchange: We understand Agricultural appropriation bills now being considered. California vegetable industry, now in very serious condition account increased railroad rates and industrial depression in East, needs all possible assistance to efficient marketing. We ask you to do all possible to assure sufficient funds for Bureau of Markets, which has done great work for California shippers and producers, enabling them to give us complete service, and to reopen Pacific coast stations. Believe it is important to extend leased wire to Pacific coast markets to assure accurate and efficient news service. Cost of leased wire, we understand, is not excessive, as it will be used by other projects. California farmers and distributors face severe crisis and need this practical help of Bureau of Markets.

From Chamber of Commerce of Los Angeles: Telegraphic market news reports on fruits and vegetables more urgently needed California than any other State in the Union. California by far leading State in commercial production and shipping fresh fruits and vegetables, is at great distance from markets, and dependable in large measure on reliable market reports, which can only be furnished properly by disinterested governmental agency like Bureau of Markets. Withdrawal this year telegraphic news service Government leased wire Kansas City west to California has been irreparable loss California fruit vegetable interests. Over 40,000 carloads vegetables annually shipped east out California; 8,000 to 15,000 carloads cantaloupes, almost 50,000 cars citrus fruits, and California is leading dry-bean and honey producing State, with over five and one-half million of latter produced annually and from 5,000,000 to 8,000,000 bushels dry beans. Service on last two commodities has been eliminated entirely owing lack appropriations 1919. Tonnage, 23,581,000; value, \$278,101,000. We urge strongly sufficient appropriation be included for Bureau Markets for this specific purpose, re-leasing their leased-wire service to California for fruits and vegetables, and placing this market on same satisfactory basis as held 1919, which we understand calls for not less than \$75,000.

From California Vegetable Union: California produces enormous quantities of vegetables and fruits in excess of local requirements, for which markets must be found, and it is of the utmost importance to the industries concerned that reliable and accurate information pertaining to conditions and prices prevailing at distant markets be disseminated with as little delay as possible. This work can be efficiently carried on only by the Government, and we urgently request you endeavor have restored leased-wire service by Bureau of Markets, which was discontinued account lack of funds. Absence this service proving serious handicap.

From Vail Co.: California generally badly in need of telegraphic reports from Bureau of Markets. We urge strongly the appropriation of sufficient funds for said bureau to enable it to lease wire from Kansas City to California and give us service as during last year.

From W. E. McCaslin Co.: We urge particularly that sufficient appropriation be given Bureau of Markets to extend the leased wire to Pacific coast and enable service to be rendered as good as in 1919 on fruits and vegetables. No doubt curtailing of funds greatly hampers valuable service, which we all need.

From J. B. Vaile, president of Los Angeles County Farm Bureau: Wish to call attention to extreme importance fruit and vegetable interests in California and great good Bureau of Markets has done. Urge appropriation for Bureau of Markets be continued.

From Randolph Marketing Co.: We earnestly request extra effort be made to extend Government leased wire Kansas City with reference fruits and vegetables was found invaluable. Information given these reports is similar that provided for Government distribution cantaloupes.

From L. K. Small Co.: Are informed that House committee will consider legislation affecting Department of Agriculture activities, including Bureau of Markets. Can you not arrange appear personally? Exert your influence toward securing increased appropriations.

Mr. OSBORNE. The appropriation asked for and necessary in order to reestablish the leased-wire news service of the Bureau of Markets to the Pacific coast is one for the good of the whole Nation. Our country is broad and of varied climates. In the North are our most numerous manufacturing centers and the fields of hardy grains; in the South's more temperate climates grow the more sensitive fruits, the cotton, tobacco, and other products which the northern climate will not nurture. This is true for the great breadth of the land from the Atlantic to the Pacific.

Our country's population has grown from the east to the west and remains greater in the east, but that population is fed by the meats, the grains, and the fruits of the west. The governing markets are New York and Chicago, where speculative changes may make or undo the western producers. It is unfairly discriminatory against western marketers to deny them a service which in the past has served to alleviate the disadvantages under which they trade at such a distance from the control points, and it is to speak against such discrimination and in favor of the reestablishment of that equalizing service that I am here.

As the telegrams which I have placed before the committee show, this disadvantage from distance between production and controlling markets is now accentuated by the efforts of the Government to rehabilitate its great transportation system, and it becomes more than ever necessary to save the producers on our western coast from utter ruin by doing everything which the Government can do to equalize the conditions under which their crops are marketed.

The House has within a fortnight recognized that this is a situation of the utmost emergency which has resulted from our unprecedentedly changed economic condition and has passed a measure carrying a tariff which, though it be inadequate, affords at least some measure of relief against the difficulties arising from the great distances of our land.

I earnestly urge upon you, Mr. Chairman, and upon you, my colleagues, members of this committee, to recognize the great need of holding together even more strongly under the revolutionary economic changes now being experienced than they were bound in the past the eastern and western regions of the United States. The activities of each have grown increasingly interdependent upon the other region, and it now behooves this Congress, representing all regions, to grant the relief now sought from marketing difficulties existing by reason of distances which can be in great part eliminated by this governmental service.

Mr. Chairman, I urge not merely the granting of the appropriation now recommended before you, though by all means that at least is essential, but I urge as not less essential that such appropriations be made as will be adequate to the reestablishment of a leased wire to the Pacific coast for market news reports. I understand, Mr. Chairman, that this will require an additional appropriation of \$120,000 to reestablish offices at Los Angeles, San Francisco, and in the Northwest.

SATURDAY, JANUARY 8, 1921.

FOR ADMINISTRATION OF THE UNITED STATES WAREHOUSE ACT.

STATEMENT OF HON. W. D. UPSHAW, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF GEORGIA.

Mr. UPSHAW. Mr. Chairman, I am simply asking the privilege of supplementing what was said this morning by Mr. L. B. Jackson, Director of the Bureau of Markets, of my State. I did not have the privilege of hearing him, because of an urgent departmental engagement which made me a little late, but I should like to submit for the records that part of a letter from him which constitutes argument and to simply add that my observation has been that the encouragement already given by the Government to the Bureau of Markets has been tremendously effective in the large number of warehouses that have come in under the warehouse act and have been bonded under that act.

JANUARY 4, 1921.

Hon. WM. D. UPSHAW, M. C.,
House Office Building, Washington, D. C.

DEAR CONGRESSMAN: Early in 1920 this State bureau entered into a cooperative agreement with the Federal Bureau of Markets, wherein we mutually undertook to induce the cotton warehouses of Georgia to license and bond under the United States warehouse act. We are glad to say that we have brought in more than 130 cotton warehouses in Georgia. We expect to see the day, and that not far distant, when no public warehouseman can afford not to be licensed under the Federal act. The system is working splendidly in this State. It is simple and easily complied with. Attached hereto find a brief synopsis pertaining thereto.

The Willingham cotton warehouse failure, which occurred in 1920 and which caused severe losses to our banking institutions in the State, could never have carried bogus cotton receipts for 4,500 bales of cotton had it been licensed and inspected under the United States warehouse act.

No matter which way we turn to find improved systems of marketing and financing we invariably get around to the fact that the integrity of the warehouse receipt is the mudsill on which we must build.

Congress has heretofore, through lack of understanding, failed to encourage the vigorous functioning of the United States warehouse act by only granting a very meager appropriation. The question of appropriation for the administration of the United States warehouse act will be heard this week by a subcommittee of the House Appropriations Committee. This subcommittee is composed of Anderson, of Minnesota, chairman; Rubey, of Missouri; Byrnes, of South Carolina; Mason, of New Hampshire; and Magee, of New York. In order that the good work along this line commenced in Georgia can go forward it is necessary that the appropriation for the United States warehouse act be reasonably liberal.

We ask that you spare time on receipt of this letter to speak to each of the subcommittee above named, and urge them to give the warehouse appropriation their careful consideration.

Unless the United States warehouse division of the Federal Bureau of Markets is given sufficient money to carry out the quarterly inspection, then the system will break down and our progress along this line will go for naught.

This matter needs your help with the subcommittee at this moment.

Respectfully,

STATE BUREAU OF MARKETS,
L. B. JACKSON, *Director*.

And concerning this work, I frankly believe there is no one thing that the Government can do that will have a greater effect in bringing the farmer—and I speak now especially of the farmers in my section, the cotton farmers, though I am sure this would be effective

with other farm commodities, in bringing the farmer to a wholesome state of independence of the artificial and often devilish speculator and manipulator.

The matter appears to me also not merely as temporary relief, but having a stabilizing effect on general rural conditions.

Mr. BYRNES. Your idea is that the certificate or warehouse bond by the United States Department of Agriculture would be better security and that the farmer, having better security, could borrow money more easily and on better terms?

Mr. UPSHAW. That is the point.

Mr. BYRNES. And thereby help the rural man?

Mr. UPSHAW. That is the very point that I make, thus bringing to the farmer that spirit of self-reliance that will not only add to his efficiency, but that will make his son be content to follow in his footsteps.

The exodus from the farm has been alarming in our section, and I am almost desperately convinced that every possible thing that the Government can consistently do should be done to make farming attractive to farmers and the sons of farmers.

Mr. BYRNES. You think the best way to keep the boys on the farm is to make it possible for them to make money on the farm?

Mr. UPSHAW. Certainly.

Mr. MAGEE. Is there some particular item which you were discussing?

Mr. ANDERSON. For the administration of the warehouse act.

Mr. UPSHAW. I beg your pardon. I thought you understood. We were referring to the warehouse act.

Mr. BYRNES. There has been quite an increase in the number of warehouse licenses in the State of Georgia in the last year, has there not?

Mr. UPSHAW. A very great increase. That probably has been brought out in the statement from Mr. Jackson, and it is a very pertinent remark of his, that in the case of the Willingham Cotton Warehouse failure, which occurred in 1920, and which caused tragic losses to our banking institutions in the State, they could never have carried bogus cotton receipts for 4,500 bales of cotton had it been licensed and inspected under the United States warehouse act.

Now, I do not know how much is needed.

Mr. BYRNES. You are asking \$100,000, which is an increase of about \$35,000 over the amount that was spent this year.

Mr. UPSHAW. Then I stand for the largest possible amount that the committee feel justified, under the conditions, in recommending, in order to help this Bureau of Markets, that has already proven so efficient under the leadership of Director Jackson, to function to the highest degree of efficiency.

Mr. ANDERSON. We thank you very much.

SATURDAY, JANUARY 8, 1921.

FOR ADMINISTRATION OF UNITED STATES WAREHOUSE ACT.

Mr. ANDERSON. The committee will take up item No. 91, on page 277, for the administration of the United States warehouse act; and we will hear Mr. Jackson.

STATEMENT OF MR. L. B. JACKSON, DIRECTOR GEORGIA STATE BUREAU OF MARKETS.

Mr. JACKSON. Mr. Chairman and gentlemen of the committee, about a year ago the people of our State woke up to the fact that they had been living under a wrong impression relative to the United States warehouse act. Before that time, when they thought of that act they got a mental picture of a steel and stone structure, certified accountants, bookkeepers, and things of that sort that they knew went with the ordinary warehouse. But we made a study of the act and found it was exceedingly simple, and the State Department of Agriculture of Georgia entered into a cooperative agreement with the Federal Bureau of Markets; we put on a campaign, and we have brought in 131 warehouses in the State of Georgia that are licensed and bonded under the United States warehouse act. It has been a wonderful help to us, and the system has worked splendidly.

Last year there was a cotton-warehouse failure at Macon, Ga., where there were 4,750 bogus receipts issued and hypothecated with our banks; that could not have happened had that warehouse been licensed and bonded under the United States warehouse system. As the system now operates, every receipt must show the grade of the merchandise that is stored, and that is a wonderful aid to the farmer. The administration of the act has added wonderfully to the integrity of the receipts that are issued, and in this financial crisis that has been a wonderful help because of the fact that the Federal reserve bank has been able to know that the merchandise upon which they were loaning money was absolutely safe and in hands that would protect the property. From the standpoint of preventing weather damage to merchandise it has also been a wonderful aid. The farmer, by reason of knowing his grade, has had his mind focused on the fact that his grade suffers when he allows his property to be unprotected.

Our sister State of Alabama, having seen our experience, is about to launch a campaign for 1921, and I think our efforts will be duplicated. We believe the Government should encourage the administration of the United States warehouse act with a liberal appropriation; we believe it will be a wonderful thing for the other States, and we have found in marketing and in every effort to finance that no matter which way we turn to solve the problem we invariably come around to the fact that the integrity of the warehouse receipt is the mudsill of the structure.

We hope this committee will be as liberal with the United States warehouse act as it can.

Mr. ANDERSON. Do you have State laws regulating warehousing?

Mr. JACKSON. We have a State warehouse law, but it never did function. I am the State warehouse commissioner, and I am in this agreement with the Federal Bureau of Markets in this cooperative work in Georgia, but the State warehouse law is not functioning. We found this in our State, that what we need is a national law—which we have in the United States warehouse act—in order that our warehouse receipts may be uniform with those of other States and may have integrity outside the borders of the State. Our people did not take to the State warehouse act, but, as I say, 131

warehouses have come in under the United States warehouse act, and I predict that inside of the next 12 or 18 months all of our warehouses will be licensed under that act.

Mr. ANDERSON. Have there been any suits to test the validity of the act or the validity of the obligations entered into by warehousemen under the Federal act?

Mr. JACKSON. Not that I am advised about.

Mr. WASON. How much money does the State of Georgia contribute toward the work under this act other than your salary?

Mr. JACKSON. The State of Georgia has its State Bureau of Markets, of which I am the director, and we have a fund of \$35,000 a year. That is for marketing work, and, incidentally, in order to encourage the administration of the United States warehouse act in Georgia we have taken on quite a considerable expense this year in order to facilitate the matter and to help along the work in the State. But there is no actual fund given by the State of Georgia to this particular act, although our whole department is assisting in every way it can and has taken quite a loss financially in order to help the work in the State.

Mr. WASON. I understand, then, that a portion of this \$35,000 is used in connection with the enforcement or the application of this warehouse act?

Mr. JACKSON. It is only done in this way: That where a warehouse man is not prepared to grade his stuff we enter into an agreement that we will assist him in being able to do this grading by sending samples to the capital, sending certificates back, and by work along that line.

I want to say that the inspection work should be in the hands of capable men. When the Government makes its inspection of these warehouses it is very essential that high-class men go there and do this checking. That is all expensive work, and we do not enter into any part of that at all.

Mr. WASON. By checking you mean that they take the records of the warehouse receipts that are out and check them?

Mr. JACKSON. Yes; to see whether the merchandise is there, whether the proper amount of insurance is carried, whether the grades of the merchandise have been correctly stated, and whether the business is conducted in a high-class way or not. That is for the protection of the public generally.

Mr. WASON. And also to assist in easily financing the product?

Mr. JACKSON. That is right, sir.

SATURDAY, JANUARY 8, 1921.

INCREASED APPROPRIATION FOR THE INVESTIGATION IN FOREIGN SEED AND
PLANT INTRODUCTION.

Mr. ANDERSON. The committee will take up item 100, on page 106, investigations in foreign seed and plant introduction, and we will hear from Congressman Lea, of California, regarding the Chico field station.

STATEMENT OF HON. CLARENCE F. LEA, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA.

Mr. LEA. The Sacramento Development Association, which is an agricultural association of about 12 or 15 counties in the Sacramento Valley, asked me to appear before you in behalf of the appropriation that has been recommended by the Agricultural Department. I presume you gentlemen of the committee are familiar with the general line of work carried on by the plant introduction station.

The work of this station includes investigation to ascertain promising specimens of fruit trees and cereals in foreign countries; their introduction into this country; experimentation to ascertain their adaptability to soil and climatic conditions and the cultural development thereof. There has been nothing spectacular about the work of this station. The men in charge have been earnest, practical, and not inclined to self-exploitation. This station is perhaps the largest station in the country. Its work as to particular fruits and cereals is practically exclusive. I have visited there recently and at various times and am more or less familiar in a general way with its work.

To give a concrete illustration of its work: About eight years ago jujube trees were imported from China; they are similar to a date, and are commonly referred to as "Chinese dates." This fruit has been successfully propagated in this station and there is a prospect that it will become one of the important fruits of the West. It is a wholesome, palatable, and nutritious fruit that may eventually compare with the California prune in commercial importance.

It is adapted to the whole southwestern section of this country. According to the general plan, these young trees have been distributed to growers over widely distributed areas to be tested out under different soil and climatic conditions. By following up results in the course of a few years the department has experienced information to guide growers and assist them in producing a new fruit and food supply.

At the present time this station has about 140 varieties of pears, which are planted in about 40 acres. You who know anything about the pear industry on the Pacific slope realize that the great enemy of the industry is the blight. The station has been seeking a resistant stock, a stock that will either resist or be immune from the ravages of the pear blight. The effort has developed to the point where the station now has two or three hundred thousand trees to be distributed over the United States and which have given promise of having valuable blight-resisting qualities.

Mr. WASON. Are they distributed free?

Mr. LEA. Yes; they are distributed free. They are placed in the hands of men who are successful agriculturalists, who will give proper care to the trees and report the results.

Mr. ANDERSON. They are distributed as seed stock.

Mr. LEA. No; they distribute the trees.

Mr. ANDERSON. I know; but it is seed stock, is it not?

Mr. LEA. Yes; but fully developed for production purposes.

Mr. ANDERSON. It is propagation stock?

Mr. LEA. Yes; that is the idea.

Mr. ANDERSON. The trees are not distributed in a commercial way?

Mr. LEA. No; not for the purpose of ordinary commercial distribution.

Mr. WASON. Do I understand that in making the distribution they select certain plantations or farms?

Mr. LEA. Yes. A man must show, by certain recommendations, that he is a successful and proper man to take these trees, take care of them, and give the Government the benefit of his experience.

Ten or 15 acres are in figs. Ten or 12 acres are devoted to cereal experiments, including five or six hundred varieties collected from various countries. The importance of that kind of work can be realized by a reference to the cereals now being experimented with. While I was in the Sacramento Valley this year I came in contact with a farmer who had some barley that had been developed through this experiment station. He claimed and cited facts to support his claim that it would produce 25 per cent more than the ordinary kinds of barley that have been grown in California. One can readily recognize the importance of a station of this kind if it can improve or secure a better variety of wheat or barley. If a variety can be developed which will produce 1 or 2 bushels more to the acre it would be worth millions of dollars to the country. This station is engaged in a really great work. The small amount of the appropriation asked is trivial as compared to the importance of its work.

They are doing the same thing with reference to persimmons. Of peaches they have 50 or 60 varieties. They have brought from China a wild peach that resists alkali and also strongly resists cold. Some experiments are being made in the Northwest with these trees at the present time, as well as in the Southwest, where there is much alkali land.

This station for the current year is spending about \$9,000, and the appropriation asked under subdivision A is \$12,660. At some times in the past this station has cost about \$12,000 or \$14,000. There has been an extension of this work and the area of it, and you know that at this time the prices are higher for work and materials. This association wanted me to call your attention to the important work that this station is doing and express to you the hope that you will be able to give the appropriation substantially as asked by the department.

Mr. RUBEN. How long has this station been established?

Mr. LEA. Seventeen years.

Mr. RUBEN. I was there in 1917, and they were doing splendid work, it seemed to me, and since that time the station has been increased in size by the purchase of about 130 acres.

Mr. LEA. Yes.

Mr. RUBEN. The 130 acres have not been improved very much, have they?

Mr. LEA. Not very much, but the additional acreage is being used. The work requires a wide area. For instance, those pears cover 40 acres.

Mr. RUBEN. They want this additional appropriation so that they can utilize this additional acreage?

Mr. LEA. Yes; to extend the work over the wider area and to meet the increased cost of labor and their expenses, as well as to meet the increased amount of labor required to take care of the larger number of trees and plants. In fact, the development of trees from

nonbearing shoots to productive trees more or less maturely developed and covering considerable areas naturally calls for increased appropriations, while the sum asked is no greater than has been spent in this work in earlier years. I thank you.

SATURDAY, JANUARY 8, 1921.

ESTABLISHING EXPERIMENTAL STATION FOR SILVER FOX BREEDING.

Mr. ANDERSON. The committee will now take up item No. 29, on page 195, general expenses, Bureau of Biological Survey, which is the general expense item of that bureau, and we will hear from Mr. McLaughlin of Michigan with reference to the situation in the fox-farming industry.

STATEMENT OF HON. JAMES C. McLAUGHLIN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN.

Mr. McLAUGHLIN. We come in behalf of the proposition to establish an experimental station in relation to silver-fox breeding. That industry is comparatively new in this country; it is growing very rapidly and has already reached quite large dimensions. The request at this time is for the establishment of an experimental station at Muskegon, Mich., which is the center of the industry in the country. There are more farms there than at any other place in the country and more farms in Michigan in the immediate vicinity of this town than in any other State. The value of the property there very largely exceeds the value in any other part of the country. It is recognized as the center of the industry. The National Association of fox breeders, covering the entire country, has its office there and the officers of the association are located there. The request for the location of an experimental station is approved by the association, and the plan of locating it at that point, as I understand, is quite generally supported.

There seems to be very urgent need for an experiment station of this kind. The industry, as I have said, is comparatively new, involves a large amount of very valuable property, and relates to animals that are very little understood. They are beset with diseases, pests, and troubles of one kind and another that have never been investigated to any extent.

Dr. Nelson, Chief of the Bureau of Biological Survey, stopped last November at Muskegon on his way back from Alaska where, as you gentlemen know, he had been investigating matters relating to his bureau. While in Muskegon he made a very careful study of the situation and finds by inquiry there and elsewhere that this industry seems to be groping in the dark, and while it promises very well it is confronted by many very serious problems that can only be properly studied and overcome, if they can be overcome, by the best expert advice and assistance that can possibly be given. I understand Dr. Nelson to say that his investigations indicate that the get of foxes, the size of litters that are dropped, are decreasing gradually, slowly but gradually, year by year, as time goes on, but why no one knows. It is a matter that should be investigated. He finds

also that slowly and gradually pups that are dropped are raised to maturity in smaller and smaller numbers each year as time goes on: that is, the litters are getting smaller and the number raised from the litters is getting smaller; that diseases are increasing and new troubles are coming to those engaged in the industry right along that nobody but the experts are able to understand and they can understand them only by careful, thorough, systematic, and long-continued investigations.

The secretary of the National Association is here and also an officer of the association. Those gentlemen can give you an idea of the amount of money invested in the industry, how it is growing, and the intense interest in the matter of those who are directly concerned, how the public is interested in it, and why, in their opinion, the request for an experimental farm is reasonable.

That the station should be located where we ask to have it located does not seem to me to admit of doubt, and in view of the seriousness of the situation, if the financial condition of the country were normal, I think the Congress would not hesitate for a moment in taking up this very important matter; it would take it up just as we suggest and follow the advice of Dr. Nelson for the establishment of a station at which careful study can be made of the very serious and intricate problems presented.

It has been suggested that instead of establishing a station at this time a small amount of money, \$10,000, I think, be appropriated for the purpose of making a beginning. That seems to me to be a very small amount, but it is said it would enable the bureau to employ experts to take up some of these problems and make a study of them. That would be a step in the right direction, but it does not seem to me it will do very much; it would not get us very far and it is not enough.

These gentlemen can tell you the value of these foxes and what a pair is worth. A pair of good foxes, as I understand, is worth from \$2,000 to \$3,000, and if a bitch drops four pups and two of them die there is a loss of \$2,000 or \$3,000 in one instance, and if you multiply that by the number of farms there are over the country you can see what the loss amounts to. It is not a small matter nor is it unimportant. As I have said, Dr. Nelson tells us that the number of pups dropped is decreasing gradually—they do not know why—but it is found from statistics that have been gathered that that is quite general throughout the country, and also that there is more and more difficulty in raising the young ones after they are dropped. It seems to me that the importance of it, the amount of money involved, and the intense interest in it would justify something being done by the Government. I think the best and only thing to do is to establish a station just as soon as provision can be made for it. If the committee thinks the money can not be spared and that an appropriation to enable the bureau to employ men is all that can be done, that step, at least, should be taken; but, in my judgment, it would only be a short step, and we would be losing time by failing to establish the station. I hope the committee, after making such investigation as it is able to make, will see its way clear to act favorably on this matter.

Mr. Smith, secretary of the association, and Mr. Williams, one of its officers, will give you any details that you wish, and besides think each has a statement to make.

STATEMENT OF MR. J. E. SMITH, SECRETARY NATIONAL SILVER FOX BREEDERS' ASSOCIATION, MUSKEGON, MICH.

Mr. SMITH. Mr. Chairman and members of the committee, in reading a pamphlet issued by the Government on the importance of increasing and maintaining the fur supply of the country, I noticed that the first paragraph urged the protection of fur-bearing animal and an increase in the supply. The supply of fur is becoming less and less each year, and it seems to me that what the National Association is trying to do is to maintain and increase the supply of silver fox pelts.

The industry in Michigan started about five years ago, and now it has reached proportions that are very large. There are 25 ranches located in Muskegon County alone, and the rest of the State of Michigan has about 25 more ranches. Muskegon County, the center of the industry, has approximately 1,500 silver black foxes, with a value of at least \$1,000 each, and the rest of Michigan has approximately 500, or a little better. So the State of Michigan has about 2,000 silver black foxes on about 50 ranches. Those foxes are selling from \$2,000—as Mr. McLaughlin says—to \$3,000 and more per pair. There are some places in the United States where foxes are selling for more than \$2,500 and more than \$3,000 per pair. Some of those farms are selling their breed stock for \$3,200 a pair, without any guaranty whatever.

Five years ago the industry was established in Muskegon, and for the first three years the average litter that was raised was between three and four pups at a litter; the next year—that is, a year ago—they had a great deal of trouble with worms, and the average to a litter was about two; this year we did not have so much trouble with worms, and the average to a litter was about one and one-half. This year we did not have so much trouble with worms as we did with parasites and protozoa and also trouble with diarrhea; two ranches had great losses from what they called influenza, although some call it distemper. Our average this year was about one and one-half to a litter. It seems as though the average is decreasing every year, and it is hard to tell what it will be in another year. We have had Dr. Nelson, at Muskegon, and he has looked over the situation. We have also had men from the Michigan Agricultural College, experts, and we had Dr. Hanson, from the Government experimental farm at New York, which is a fur farm but not a fox farm, and they all agree that the matter is very serious and should be given immediate attention.

Muskegon is the logical place for the establishment of such a station, although there are other States that are becoming very much interested in the industry, especially Minnesota and Wisconsin, of the Western States, and they have been raising foxes in some of the Eastern States for quite a few years—in Maine, Massachusetts, and New York—although it is not so congested there as it is in Michigan. Michigan seems to be the center of the industry, the geographical center as well as the actual center of the fox industry.

I do not know that I have presented everything that I had in mind, but I would be glad to answer any questions that the committee wishes to ask.

Mr. MAGEE. Is it a private industry?

Mr. SMITH. It is carried on by individuals, yes, to a very large extent; and we have in our membership about 150 members, but that represents a small proportion of those interested in the industry.

Mr. MAGEE. Is it a private and profitable industry in Michigan?

Mr. SMITH. Very profitable.

Mr. MAGEE. What is the object of the appropriation desired? In what way do you claim it would particularly aid the industry?

Mr. SMITH. By teaching us methods of treating and preventing and combating the diseases that constantly confront the fox breeder. You can see from my statement that the average to a litter is gradually decreasing from year to year.

Mr. MAGEE. That could be applied to any business and industry in the whole United States.

Mr. SMITH. Any stock industry.

Mr. MAGEE. Or any other kind of business.

Mr. SMITH. The Government is urging the maintenance of the fur supply.

Mr. MAGEE. But furs of the value you describe would not be available except to those who could afford to have the most luxurious garments.

Mr. SMITH. Of course, these prices are received for breeding stock.

Mr. MAGEE. I understand from what you say that the purpose of the appropriation is to aid a private industry and enable it to make still greater profit than it is making now. If they now raise these animals and get from \$2,000 to \$3,000 a pair, it would naturally be presumed to be a very profitable industry.

Mr. McLAUGHLIN. Nearly every industry carried on in this country is a private industry, and from what you say one might be led to believe that the distressing conditions we speak of as affecting the fox industry were being experienced by all the private industries of the country.

Mr. MAGEE. I am not saying that, but I am asking for information.

Mr. McLAUGHLIN. I understood that your first statement was that this condition affected all industry.

Mr. MAGEE. Many industries which are carried on by private persons would like governmental help.

Mr. McLAUGHLIN. The hog industry is a private industry: the Government is not raising any hogs to speak of, but it is the Government that puts up the money to combat the hog cholera.

Mr. MAGEE. And in the same way it puts up money in connection with the diseases of cattle?

Mr. McLAUGHLIN. Yes; to combat tuberculosis among the cattle of the country, and the cattle are owned by private individuals.

Mr. MAGEE. But they are industries where something is produced to maintain life, as distinguished from something that is very ornamental or luxurious. That is the only thing in my mind and I was asking for information to see if I could determine the extent to which the Government had made appropriations for enterprises of this character.

Mr. McLAUGHLIN. The industry is widely extended over the country and the troubles are general.

Mr. MAGEE. I gather from what the gentleman has said that this business is now in more or less of an experimental stage.

Mr. SMITH. It is; yes.

Mr. MAGEE. And it is mainly confined to several States. I was somewhat surprised to hear your statement as to the value of the fur and the value of these animals; that is a very large value and I was only asking my questions along that line. How large are these foxes—any larger than the red fox?

Mr. SMITH. They are just a freak of the red fox which has been produced by selective breeding.

Mr. MAGEE. You designate them as the silver black fox?

Mr. SMITH. Yes.

Mr. MAGEE. Just what do you mean by that—silver tips and black—

Mr. SMITH (interposing). Well, they are black all over with a sprinkling of silver hairs, but the original stock was grown from red parents.

Mr. MAGEE. Do they run wild on the areas where you raise them?

Mr. SMITH. No; they are confined to small pens. One ranch in Michigan has 108 breeding pens with a pair in each pen. One ranch alone this year lost 40 foxes, so you can see the great loss in value to them, one rancher alone, and that is just one example.

Mr. MAGEE. Were you able to determine the causes?

Mr. SMITH. No; that is where our difficulty lies.

Mr. MAGEE. What you are asking is aid to determine the diseases?

Mr. SMITH. Yes, sir.

Mr. MAGEE. And cure?

Mr. SMITH. Yes, sir; and also methods of breeding to produce the best quality of furs and size. The Government has an experimental fur farm in the State of New York, but that does not help us at all, because they have no silver foxes or black or red foxes, or cross foxes; they experiment with other fur-bearing animals, and, of course, that does not help us.

Mr. MAGEE. Have you any station in Michigan?

Mr. SMITH. No; that is the only station in the country; we have no station whatever for experimental work on silver foxes.

Mr. WASON. Do you know whether the diseases, whatever they may be, or the troubles which have recently afflicted the silver-black foxes, are applicable to the red foxes if they are reduced to confinement?

Mr. SMITH. Just the same, because any disease that a black fox is subject to the red fox is subject to; they are of the same species; but that is not true of blue foxes. Experiments have been carried on with blue foxes, but they are of an entirely different species from the red fox, and the white fox is a different species. Any experiments which may be carried on with respect to red foxes will apply to the black and silver foxes. Red foxes have been placed in infected pens, and they have contracted the same diseases that affected the silver foxes.

Mr. MAGEE. I suppose the natural state of a fox is to run wild?

Mr. SMITH. Yes, sir.

Mr. MAGEE. And when you confine him you are likely to have trouble?

Mr. SMITH. Yes; the same with cattle, sheep, or any other livestock animal.

Mr. MAGEE. But they are more domesticated. Do these foxes become tame so that you can handle them?

Mr. SMITH. If they are given proper attention they do to some extent; some foxes seem to become more tame than others, and I think it all depends on the amount of attention given each fox. They are, however, becoming more domesticated each year, and there is no doubt that in time they will become as thoroughly domesticated as the dog.

SATURDAY, JANUARY 8, 1921.

STATEMENT OF MR. A. L. WILLIAMS.

Mr. WILLIAMS. I am one of the farmers who has been having trouble. I have been in business about three years, and I have about 100 pens. I have lost about 40 foxes this year, and my troubles have been quite a number of different things. I have not had distemper, but others have had distemper; I have had troubles with worms and dysentery; I have lost about 20 from dysentery and from indigestion. So far we have been doing fine and making good at it. We are getting \$2,500 a pair for breeding stock, and we sell all we can raise; but we are having so much more trouble than we had a couple of years ago, or three years ago, that we are afraid we may not always be able to do as well as we are now, unless we get something to help us out.

Mr. ANDERSON. Is the industry extending? Are there more people going into it constantly?

Mr. WILLIAMS. Very fast. We have a demand for everything we raise, but we do not sell anything for furs; it is all for breeding purposes, and there is a great demand for all we can raise. Our part of Michigan is especially adapted to it because we have there a sandy soil and that is what we need. We have underground houses so as not to keep them damp, and it is a soil we have not been able to do much with; it is not good for agricultural purposes or any other thing, but it is especially adapted to fox raising.

Mr. MAGEE. How large a farm do you have?

Mr. WILLIAMS. I have 100 pens and my farm is 5 acres. We have each pair separated.

Mr. MAGEE. How much area of ground space do they have in which to run around?

Mr. WILLIAMS. Twenty by thirty feet, but that varies; some have 15 by 20 and others 30 by 40."

Mr. MAGEE. So they are practically confined?

Mr. WILLIAMS. Yes; they are confined in the pen.

Mr. MAGEE. Under those conditions, I should think you would have some trouble in keeping them in good health.

Mr. WILLIAMS. We do have a great deal of trouble.

Mr. ANDERSON. When foxes are mated, do they stay mated?

Mr. WILLIAMS. They stay mated, as a rule, but sometimes they will not agree; in exceptional cases we have to separate them, but if they agree, they live together for life.

Mr. WASON. They have some habits akin to humanity and need to be divorced.

Mr. WILLIAMS. There are exceptions of that kind, but very seldom.

Mr. ANDERSON. Is the equipment for the establishment of a fox farm expensive?

Mr. WILLIAMS. It costs us about \$165 for a pen for one pair. We use the same sort of wire that is used in making chicken fences, and we have the wire about 6 inches under the ground, so that they can not dig out, and then we have a guard fence 9 feet high, so that if they try to get out they can be caught.

Mr. MAGEE. How long does it take a fox to reach full growth?

Mr. WILLIAMS. They raise their young until they are a year old, and when they are 7 or 8 months old they get their full growth.

Mr. MAGEE. And they have one litter a year?

Mr. WILLIAMS. Yes; but they have their first litter when they are a year old.

Mr. MAGEE. Do they have their litters at any particular time of the year?

Mr. WILLIAMS. In April, most of them; March and April, and sometimes in May, the late litters.

Mr. MAGEE. So that the fur of a fox born in the spring could not be made available until the following winter?

Mr. WILLIAMS. Yes, sir; the following January. With an experimental farm we think we could have great assistance in bringing about a better quality of stock. I know of one party on Prince Edward Island, where this industry started, who started about six years ago, who went to Alaska and got some wild foxes; he was breeding them and selling them for \$800 a pair, but they were not registered stock, and then last year he began selling his foxes for \$2,000 a pair without any guarantee. When we get \$2,500 we give a guarantee that they will raise two pups, and if they do not raise them we give them to the party who bought the foxes. This year that man is selling all he can furnish and is now contracting for next year's pups at \$2,750 a pair without any guarantee.

Mr. MAGEE. Is there any difference between the value of the male and female?

Mr. WILLIAMS. No; about the same, although for fur the male would be worth more, because he is a little larger.

Mr. MAGEE. And has better fur?

Mr. WILLIAMS. Not better fur, but the fur is more valuable on account of the size. Of course, there is a great deal of difference in the value of the furs; there are markets where black foxes sell for \$75 and others where they sell for \$1,000 or \$1,200; it varies a good deal, but we are only interested in breeding purposes.

Mr. MAGEE. When you spoke of pups, I assumed you referred to the males?

Mr. WILLIAMS. No; I referred to the little ones.

Mr. MAGEE. Either male or female?

Mr. WILLIAMS. Yes, sir. A fox usually weighs about 10 or 12 pounds when he is full grown. When I first started the average litter

in our county was between three and four, and sometimes we had litters of five or six, but there are so many that do not raise any that the average is cut down. I had one pair that raised seven the first year and raised them all.

Mr. MAGEE. What proportion do not breed?

Mr. WILLIAMS. About one-third; perhaps not as many as that, but about one-third that do not raise any pups. Sometimes the old foxes will not own their young; sometimes they will kill them; sometimes they get nervous and bury them alive.

Mr. MAGEE. You mean the males?

Mr. WILLIAMS. No; the females as well as the males, but the females are worse than the males.

Mr. MAGEE. In killing them?

Mr. WILLIAMS. In burying them alive. We often have to take them away and raise them on a cat.

Mr. McLAUGHLIN. I wish to add that in matters of this kind I know the committee often demands cooperation and sometimes contributions on the part of an association like this. This association and the city of Muskegon are ready to meet any demand for contribution or cooperation that this committee thinks ought to be made.

Mr. RUBEY. I came in a little late. What are you asking?

Mr. McLAUGHLIN. We are asking for the establishment of an experimental fox farm at the center of this industry, which happens to be in Muskegon, my home town, and Dr. Nelson estimates the amount necessary at \$35,000. I can think of no way the amount might be reduced except that the site might be furnished by the association. You did not hear, Mr. Rubey, what I said, and perhaps did not gather it from what other gentlemen have said, that Dr. Nelson has made quite an investigation of this entire matter, and he reports the distressing fact that the size of litters of the foxes is gradually and steadily decreasing, and the number of the little ones raised out of the litters that are born is gradually decreasing. There is a development of diseases, parasites, and innumerable troubles, and he advises that an investigation be made by the department. The suggestion was and the request is for the establishment of an experimental farm, involving the expenditure of the amount of money stated, and, of course, it would take some money to operate it year by year.

I know how those things grow; but Dr. Nelson has told me several times that if he gets started the cost will not grow, because, while he will have to buy the foxes and experiment on them, if he is successful in increasing the stock the sales will pay the expense of running the station; if he is able to do anything at all, he will be more successful than private breeders; he can raise more stock, it will be worth more money, and yield enough to take care of the station. It has seemed to the people directly and indirectly interested in the matter, and to the department, that an experimental farm should be established at once, because troubles are increasing and growing year by year. But there certainly should be an appropriation to meet the latest suggestion of Dr. Nelson, for the employment of men to begin at once a study of the entire proposition.

I am very much obliged to you, gentlemen, for hearing Mr. Smith and Mr. Williams, as well as myself.

SATURDAY, JANUARY 8, 1921.

INCREASE IN APPROPRIATIONS FOR FARM MANAGEMENT.

STATEMENT OF MR. BENJAMIN C. MARSH, SECRETARY AND DIRECTOR OF LEGISLATIONS OF THE FARMERS' NATIONAL COUNCIL, WASHINGTON, D. C.

Mr. MARSH. Mr. Chairman and gentlemen, my statement will be very brief, which I know you will appreciate because you have so much testimony on these various items.

Of course it is impossible for anyone who is not a member of the committee and who has not investigated in detail the administration of the Department of Agriculture, to make any absolutely specific recommendations. I do not want to do that, but ask that in making your recommendations for appropriations for the Department of Agriculture, and I ask it on behalf of the farmers' organizations united in the Farmers' National Council, that you will make as liberal appropriations as possible particularly for those departments or bureaus of the Department of Agriculture which are dealing with the marketing of farm products, because I think I am strictly accurate in saying that the farmers of America are paying the penalty of overproduction or underconsumption to-day, I do not know which way to put it. Usually they mean the same thing.

I have not been through the detailed tables supporting these requests for increased appropriations, but we do know the Office of Farm Management is rendering an unique and important service in putting agriculture upon a stable basis by finding out the actual costs of production, which the farmer needs to prove the fact, which he knows altogether too well, that agriculture is not a profitable industry in the by and large, to-day.

Whether the full additional appropriation asked, in round figures \$329,000, is exactly the amount I can not state; but we do think the request ought to have the most careful consideration and, similarly, that the appropriation asked for the combined departments or bureaus of crop estimate and bureau of markets should be granted as fully as possible, because the marketing end of farming, as I have indicated earlier, is one of the most important ends. The farmer usually produces, and then finds himself at the mercy of investment bankers and corporations who are able to get credit which the farmer can not get, certainly not on a parity as to interest rates and commissions and general charges for credits, and we think this appropriation for this combination of the bureau of crop estimates and bureau of markets should be made if possible.

On other points I should like to go into detail as to the appropriations for eradicating ticks and for treating foot and mouth disease, and various other precautionary measures, so to speak, as preventative measures of the department; but I can not do it. But I should like to make this request: We have been very much impressed with the statement of the Secretary of Agriculture that the tremendously rapid and general turnover in the personnel of the department is most seriously crippling the efficiency of the department. Now, as you know, farmers do not get big incomes, with very rare exceptions;

they feel they are lucky if they break even in a year like this; but I have talked with a good many farmers about this proposal in some recent trips I have taken out to the Middle West, and they are coming to realize more and more that farmers who are determined to secure control of their products clear through, as far as possible, to the consumer have got to have the services of experts. Farmers' organizations are paying for experts, and they know the Department of Agriculture, if it is going to keep experienced men in the department, if it is going to be able to be on the same footing with the big commercial organizations, which pay such large salaries, has got to pay adequate salaries for experienced men.

Mr. MAGEE. Do you think that the Government can compete with private industry in salary?

Mr. MARSH. Well, Congressman, when I recall that 33 people own 2 per cent of the wealth of this country, and 23,000 own 27 per cent of the wealth of the country, with income proportionate, I realize that the Government can afford to get the best brains of the country to serve 100 per cent of the American people.

Mr. MAGEE. Can we afford to pay a man a salary of \$50,000 a year?

Mr. MARSH. That is a pretty liberal salary. I do not think there is any such case on record where the Government would be obliged—I mean the Department of Agriculture—to pay such a salary.

Mr. MAGEE. If they are to pay the same prices as private industries I think you will find a good many men in private industry getting \$50,000 a year.

Mr. MARSH. Yes; perhaps I made too broad a statement. I think it has got to be in a position, though, where if a man's services are worth \$50,000 to the entire people that the Government is able to pay it. I do not know of such cases in departments.

Mr. MAGEE. Have you not got to admit, as a fundamental basis, that it is absolutely impossible for the Government to pay salaries equal to salaries paid in private industries for similar work?

Mr. MARSH. No; I can not admit that, because if I did, I would have to admit that we were rapidly getting toward the state of anarchy——

Mr. MAGEE. You mean rapidly getting toward the state of anarchy if it were so?

Mr. MARSH. No; if it were true that the Government, representing the whole people, was unable to pay the salaries paid men on similarly responsible work, assuming, of course, these men were getting salary for services rendered and not as graft.

Mr. MAGEE. Have you not got to admit that the most the Government can do is to pay reasonable salaries for services rendered?

Mr. MARSH. No; the Government should pay on a parity for equal service rendered.

Mr. MAGEE. The Government can not do it; the taxpayers could not raise money enough, if they would sell all their property and then, in addition to that, borrow all their credit would bear, which you, of course, know as well as every other intelligent citizen knows.

Mr. MARSH. Well, I thank you for the last compliment, intelligence, at least. I am willing to concede that.

I am sorry that Congressman Magee had to leave, but I am not urging a \$50,000 salary, and would not like that to appear in the

record. I do not think there is any necessity for such a salary. As I understand it, the Department of Agriculture is very strictly limited, in the cases of most of its employees, to about \$5,000, a few at \$7,500, and a few possibly at \$10,000; but my point is this, that certainly men who have the capacity to step right out into commercial life on salaries two or three times what the department can pay are worth a good deal more than the department is paying them to-day.

Mr. BYRNES. The organization you represent, has that any connection with the Farm Bureau Federation?

Mr. MARSH. No, sir; it is entirely separate. I just wish to state—pardon my smiling, because that was a question put to me once yesterday and also to-day—it is interesting. There are four national farm organizations; that is, the American Farm Bureau Federation, having headquarters here, which is entirely distinct from the Farmers' National Council. It is a union of State farm bureau; I believe they have branches now and affiliations in 33 States. This fact is true, however, that a good many of the farmers who are members of organizations affiliated with the Farmers' National Council are also members of State farm bureaus, and we are sort of interlocked in the membership.

Mr. BYRNES. But that is an organization entirely separate?

Mr. MARSH. Yes. The president of the Farmers' National Council is Hon. Herbert F. Baker, and the general manager is Mr. George P. Hampton.

I want to say this, that when we do agree on a measure we all pull together. When we disagree our slogan is, "Now, let us have the fullest discussion"—of whatever it may be on. If we differ on anything, we want to thrash it out and let the membership decide. I think I may say this: We all agree on the necessity of the Government paying fair salaries, I will not say generous, but fair salaries for conspicuously able men.

It would be futile for me to go into detail as to any of these bureaus, but I just want to stress these principles which we hope you will consider.

SATURDAY, JANUARY 8, 1921.

ERADICATION OF PREDATORY ANIMALS.

STATEMENT OF HON. C. B. HUDSPETH, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS.

Mr. HUDSPETH. Gentlemen, I want to talk to you about this matter from a revenue-raising standpoint.

Mr. BYRNES. Are you speaking with reference to the eradication of this tuberculosis?

Mr. HUDSPETH. No, sir; with reference to the predatory animal.

Mr. MAGEE. Are you troubled with predatory animals from the Federal forest reserves?

Mr. HUDSPETH. No, sir; except those that come out of the State of New Mexico. In Texas we have destroyed the wolves to a great extent; and I want to say to you that we never would have destroyed so many of them if it was not for the Government's aid. X

want to say to you gentlemen that, for 16 years as a member of the Texas Legislature, I introduced a bill every two years appropriating a sum, which was augmented by the counties, as bounty upon wolves. It destroyed many wolves; and the comptroller's records show that for two years after the first appropriation of \$300,000 was made that there were 160,000 wolves destroyed, and 250,000 wildcats. They had to bring in the scalp and a part of the head to the comptroller in order to get this bounty.

Now, at that time, in the western part of Texas, the lands were being assessed for 50 cents to a dollar an acre. There we usually assess for 60 per cent of the value. They were being purchased for \$1 and \$1.25 an acre. I am in the sheep business myself. I am running 20,000 sheep and goats. It was costing me at that time for sheep herders, before the wolf was eradicated—because, you understand, when you do herd them you lose a bunch of sheep occasionally, and the wolves will kill them—it was costing me on an average of \$1,000 a month; but when we exterminated the wolf down to a certain point, to where we could turn our sheep loose, we fenced with a net wire and turned them loose, and all of that expense was taken away. To-day that same land is upon the tax rolls at from \$3 to \$5 an acre; and that is due, gentlemen, solely to the eradication of the wolf. We could not have utilized that land as we are to-day, turning our flocks loose, just the same as you gentlemen in the Northwest turn your cattle loose, in these net-wire pastures; and, in addition, there is the expense of the herders and the food for the herders; and then we have also what we used to call camp tenders or camp rustlers.

Mr. MAGEE. You are referring to losses from the animals?

Mr. HUDSPETH. Losses from animals. While the State of Texas matches every dollar that you appropriate here, we did not make the headway that we should have made under the old bounty system, because the trappers were dishonest. They would turn the she wolf loose in order to raise more wolves, in order that they could get more bounty, but when the Government came in with its trappers, paying them by the month, and making them save the head of every animal that the Government got, then the incentive was not so great to propagate the wolf, and it has been destroyed, as far as the State of Texas is concerned, except what we get from the State of New Mexico.

As I say to you gentlemen, it has been shown in Texas to be a revenue-raising measure, and I want to say to you that it is a revenue-raising measure to the Government of the United States.

The Secretary of Agriculture is asking for \$153,000 additional. I want to say to you gentlemen that every dollar of this is needed. You are called upon to raise this item and that item on the list, and you can not raise them all. That goes without saying, but I say to you gentlemen that this is one of the most essential appropriations that has ever been made by the Government of the United States. In my judgment it stands on a parity with the eradicating of the pink bollworm in cotton. As a practical stockman, I know what it means to eradicate the wolves. I am not talking so much for the people of the State of Texas, because they are practically eradicated there, but I am speaking for my neighbors to the north.

Mr. MAGEE. How far will these big-timber wolves travel away from their homes?

Mr. HUDSPETH. From 50 to 100 miles at one time.

Mr. MAGEE. Will they manage to get back to their haunts the same night?

Mr. HUDSPETH. No; they will kill stock right along the road. Maybe they will not get back for a week. There are big Lobo wolves, almost as large as a mountain lion, and they will kill a grown steer. They will make these incursions. I rode up one day on to three of them killing a 4-year-old steer. They make incursions, and they have killed my calves. They destroyed 200 calves for a neighbor of mine in one year. He could not trap them, because they made these incursions through there. I finally got an experienced trapper, and he caught three. The Government has good, experienced men. You have got to study it, just like a doctor studies medicine. There are remedies for different ailments. You have got to change the bait. For instance, you have got to put something on the soles of your shoes so that they can not detect the human scent, or they won't go near that trap.

Now, as I say, I employed a trapper and paid him a bounty of \$150 a wolf.

Mr. MAGEE. Mr. Taylor has not overdrawn some of these cases?

Mr. HUDSPETH. No, sir. This trapper got on the trail of these wolves, and he was just about half wolf himself. He could barely read or write, but he knew how to follow an animal, and he caught these three wolves many miles from my ranch.

Mr. BYRNES. How did he catch them?

Mr. HUDSPETH. He trapped them. He put the traps on their trail. You see, they frequent a certain trail.

Mr. BYRNES. A runway, you might call it?

Mr. HUDSPETH. A runaway; yes, sir. They bait them with the urine of a she wolf. They catch the she wolf and they bait them with that urine, and that catches the male wolf. Catching these wolves is a study, but, as I say to you gentlemen, and I say to my good friend from Minnesota, Mr. Anderson, who is not possibly as familiar with this as our people down there—I say to you that you can not make a more necessary appropriation than to give what the Secretary of Agriculture has asked for, an additional \$153,000.

Mr. ANDERSON. I do not minimize the correctness of that statement at all, but it is a statement that has been made about nearly every appropriation in this bill.

Mr. HUDSPETH. That is true. As I said to you, you are called upon to do this and do that, but this stands, in my judgment, right alongside of the eradication of the pink boll worm, which we know will destroy the cotton industry.

Mr. ANDERSON. Still, your State has not done what it should have done in the eradication of the pink boll worm. I guess it is going to.

Mr. HUDSPETH. I did not catch that statement.

Mr. ANDERSON. I say your State has not done what the department thinks it should have done in the eradication of the pink boll worm.

Mr. HUDSPETH. Now, it is in my own home county of El Paso. We can not get the cotton out of there to-day, because they are

quarantining us; but they have a law in Texas declaring a noncotton zone, if they will apply it.

Mr. BYRNES. As far as you are concerned, next to the pink boll worm this is the most meritorious appropriation?

Mr. HUDSPETH. I think it stands right along parallel to it. Here is a statement that I would like to have read into the record, where an old outlaw wolf was destroying many head of stock in Custer, Wyo., and finally they got Mr. Williams, the Government trapper, and he was around close to Custer, Wyo., and he trapped for that wolf almost a year, and finally caught him. The people said there that he had destroyed \$25,000 worth of their live stock.

Mr. BYRNES. I think we have that gentleman's history already in the record.

Mr. HUDSPETH. I have got that statement, showing what one wolf can destroy in live stock. I am certainly interested in this appropriation.

Mr. ANDERSON. If there are no further questions, we are much obliged to you, Congressman.

SATURDAY, JANUARY 8, 1921.

FOR ERADICATION OF PREDATORY ANIMALS.

STATEMENT OF HON. CARL HAYDEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ARIZONA.

Mr. HAYDEN. Mr. Chairman, two years ago the Legislature of the State of Arizona repealed all laws relating to the payment of bounties for the destruction of predatory animals and appropriated \$50,000 to be used in cooperation with the Biological Survey in the eradication of such animals. Where a high bounty was paid certain trappers would allow female wolves and coyotes to escape to raise another litter in order that they could collect more bounty, so the legislature decided that the only safe way to eradicate predatory animals was to cooperate with the Biological Survey in the employment of experienced trappers. Most of the remarks made here to-day had relation to predatory animals, but I want to impress upon the committee that in this additional estimate for an appropriation of \$150,000 is included the eradication of prairie dogs, and it has been demonstrated that they can absolutely be eradicated. In one county in my State, which was over-run with prairie dogs, by cooperation between the Biological Survey and the State and county authorities, the work has been so thoroughly done that there is not a prairie dog alive there to-day, and thousands of acres of land which had been ruined for grazing purposes has been brought back to productive use.

The method pursued by the Biological Survey in eradicating prairie dogs is to make a survey of a given area to determine the outside limits of where the dogs live, and then clean them up so that when the job is done, it is done for all time. You should, therefore, not look upon this appropriation as one which will continue forever, but if Congress will make it large enough and go at the

work vigorously, in a few years the prairie dog can be completely eradicated.

Mr. MAGEE. How do they exterminate them? Do they trap them?

Mr. HAYDEN. Poison is used. The survey has worked out a most effective poison for prairie dogs and ground squirrels. The same is true as to the killing of the coyotes.

In northern Arizona an effective poison campaign was recently made against the coyotes. A number of wild burrows were killed and bait made out of the meat and my recollection is that they found 136 dead coyotes in a week from that particular poisoning expedition. The Biological Survey undoubtedly knows how to go about this work in the right way, all they need is enough money to carry it on. I sincerely trust that this committee will allow the \$150,000 increased estimate made by the Secretary of Agriculture—not that it is enough, but heretofore we have had difficulty in inducing the department to estimate for an adequate amount of money.

I am satisfied that on investigation you gentlemen will find that there is available now in the Western States, by appropriations of their legislatures, at least a million dollars for cooperation in this work, showing that the people of the West are vitally interested, and have made public funds available to a much larger extent than Congress, notwithstanding the fact that this work is practically all done on the public domain or in the national forests, wherein the title to the land is in the United States.

Mr. ANDERSON. We are very much obliged to you, Congressman.

SATURDAY, JANUARY 8, 1921.

FOR ERADICATION OF PREDATORY ANIMALS.

STATEMENT OF HON. CHARLES J. THOMPSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OHIO.

Mr. THOMPSON. Speaking in behalf of the work of the Biological Survey, I would say I do not live in the West or Southwest. I am from Ohio—yet, I have traveled through those sections of our country and I have been in New Mexico and Arizona. I have had occasion to observe the workings of the Biological Survey. In the days before the country was settled, mountain lions preyed on the buffalo and also on the deer. Now, that those herds have vanished mountain lions and wolves prey upon the stock of the settlers. It is very necessary to have efficient governmental cooperation such as the Biological Surveys affords to operate in those fields to assist in exterminating predatory animals, both large and small.

The wolf is the smartest animal that exists. He is smarter than the fox, and is an animal that goes out and kills stock in the open by running out and catching an animal by one of its hind legs. Wolves will run along with the alarmed steer, holding on and chewing at the tendons until the creature falls, and then the wolf proceeds to tear out the flanks and eats the animal alive. The mountain lion jumps astride of a colt's neck and kills it. In the Southwest trappers of the Government go in and exterminate the wolf by trapping;

also the mountain lion; and thereby save the flocks of sheep and cattle of the settlers who are trying to add to the wealth of the country by producing stock. I listened with a great deal of interest to my colleagues, Mr. Hudspeth, of El Paso, and Mr. Hayden, of Arizona, and I know from personal observation that their statements are true and correct.

As to the small animals in New Mexico and the Southwest, especially prairie dogs, it is absolutely necessary to have a large force to exterminate them. I feel that it is to the interest of the Government—and I know it is in the interest of economy—to have a liberal appropriation for this purpose, and I would very much dislike to see any cutting down of the appropriation for the Biological Survey. I do not think it would be wise, and therefore I wish to say that my purpose in appearing here is to seek to have the appropriation given liberally and freely, if, in the wisdom of the committee, the members can see their way clear to do so.

Mr. ANDERSON. We are very much obliged to you, Congressman.

SATURDAY, JANUARY 8, 1921.

FOR ERADICATION OF PREDATORY ANIMALS.

**STATEMENT OF HON. EDWARD T. TAYLOR, A REPRESENTATIVE
IN CONGRESS FROM THE STATE OF COLORADO.**

Mr. ANDERSON. We will take up now item No. 29, page 175, "General expenses, Bureau of Biological Survey."

Mr. TAYLOR. Mr. Chairman, I live in the little city of Glenwood Springs, in western Colorado, and have lived there for nearly 35 years. It is almost surrounded by forest reserves. We have nearly 14,000,000 acres of forest reserves in the State of Colorado. The reserves come down to within about a mile and a half of my home town. I happen to own two little ranches, as we call them in our country, bordering on the forest reserves. I had the pleasure of taking Brother Rubey, one of your committee, to see one of them, and if he can remember, when he looked up on the hills which commence to rise right up from my ranch, that was in the forest reserve, which extends for about a hundred miles to the north and farther than that to the south. Homestead settlers and miners are, practically speaking, shut out of these reserves. That is, the forest reserves are not inhabited, generally speaking.

Mr. ANDERSON. They say that there were 6,000,000 of them in there last year.

Mr. TAYLOR. Oh, yes; migratory tourists and some temporary campers go through some portions of the reserves for a short time each summer, but in the main those forest reserves are left uninhabited and practically in a state of nature, except they are grazed by cattle and sheep. The result is that they have very naturally and inevitably become the breeding grounds for the predatory wild animals. Mountain lions, gray wolves, coyotes, bobcats, bear, etc., abound there by thousands and thousands. The Bureau of Biological Survey reports over 25,000 of these animals killed last year.

It is a frightful loss to the cattle and sheep interests of Colorado every year. Those animals especially kill the calves and colts and the sheep. The official report shows that over \$20,000,000 worth of live stock are killed every year by these animals. I don't know just what proportion of that \$20,000,000 annual loss is in Colorado, but I know that a very large per cent of it is in my State. It is one of the very great losses that is figuring in the frightful hardships and handicaps that the stock industry generally has in Colorado. Two of the great annual losses of the Colorado stockmen are caused by the predatory wild animals and by poisonous plants—larkspur, loco, etc.

Last season there were in the forest reserves of Colorado 372,582 head of cattle, 8,962 horses, and 1,018,499 sheep, and they have no protection from these ferocious animals.

Mr. MAGEE. Are these wolves the ordinary prairie wolves?

Mr. TAYLOR. Oh, no, sir; they are the big gray wolves, the most destructive animals in the world. They run in pairs or three or four of them, and they can down any animal. It has always seemed to us in the West that you gentlemen ought to more fully realize this very serious situation and authorize such ample appropriations as would effectually and completely exterminate those wild animals. If we could ever get them wiped out and exterminated once, so that they would not be breeding and increasing all the time, we would not have to do it over again. Congress ought to appropriate whatever amount is necessary to just complete the job once and for all. But until we do appropriate enough money to clean up these forest reserves of these wolves and coyotes and mountain lions, bobcats, and bears—although the bears are not so bad—this loss and this awful destruction of good animals is going ahead. This appalling loss is not only to the people that use the forest reserves, but all stockmen and ranchmen in or near the mountainous portions of the State are injured by them every year. These wolves and coyotes will come down out of the forest reserves on to the ranches below. They come on to my little ranch and kill a calf occasionally and grab up our chickens and run back up into the forest reserve and eat them.

Mr. MAGEE. Do these animals destroy each other to any extent?

Mr. TAYLOR. Oh, no; not much. They forage on other animals. They do not have to forage on each other. Ordinarily speaking, they live off of cattle, sheep, colts, and young game. Of course, our game is already nearly all gone, and these animals kill a large part of it. It is almost out of the question for a young deer to escape any more. They just clean them all out. We have had a closed season on elk and mountain sheep for many years and also on deer in Colorado for four or five years, and are trying to preserve some of the game in the forest reserves, but it is almost hopeless if these animals are not shot, poisoned, or trapped.

Mr. MAGEE. They probably go West from the reserves, don't they?

Mr. TAYLOR. You mean the wolves?

Mr. MAGEE. These animals?

Mr. TAYLOR. Oh, yes; they roam all over the country. They travel hundreds of miles, but their main retreat, their place of safety, is their breeding ground, back in the reserves, where they are unmolested. That's where they mostly come from and return to.

Mr. BYRNES. What is your proposal?

Mr. TAYLOR. My proposal is to give us all that you can, and at least appropriate the amount asked for by the bureau that is doing this work. The States, at least Colorado, is doing its full share, and the counties and stock associations are all doing their full share, especially on the public domains outside of the reserves. But the United States Government ought to fully and promptly and effectively clean up these forest reserves that it charges these stockmen for grazing their stock upon, and until such time as Congress does make adequate appropriations for this purpose and go at it in a businesslike and wholesale way and kill off all of these animals we will have this terrible loss all over the West. I think these men are doing good work. I think these hunters and trappers are spending this money legitimately and honestly and intelligently. They have gotten out bulletins on how to get these animals. They are the hardest things in the world to shoot or trap or poison. It takes a skilled and experienced trapper to catch them. My idea is this, that if you will ever appropriate sufficient money to thoroughly do the job once you will never have to do it again, and it will be a great saving in the end. We ought to go after them as if we meant to get them. As long as you make these little piecemeal appropriations and kill off just a few of them each year, they are going to keep on growing and you will have to keep on appropriating forever. It will be an endless chain. I am giving you the conditions. My appeal to you gentlemen is that this frightful menace is all over the forest reserves; this annual destruction of \$20,000,000 worth of stock is there. The people need that meat that those animals are eating. The only way that we can ever escape from this loss is to poison them, trap them, and shoot them, and if you do not make a sufficient appropriation for that purpose at this time, you are just trimming around the edges a little and encouraging the wolves, but you are not getting at them.

Mr. MAGEE. Has the State of Colorado begun any action?

Mr. TAYLOR. Oh, yes. Our State pays a big bounty on them, and its counties pay a bounty. The cattlemen also pay a large bounty. We have an aggregate bounty as high as \$50 apiece on these gray wolves. I know the coyotes and the gray wolves. I have shot them and trapped them myself and I have also poisoned them myself, and I earnestly appeal to you gentlemen, in the interest of the stock growers and the development of the West generally, to give us a liberal appropriation for this positively necessary work.

SATURDAY, JANUARY 8, 1921:

FOR ERADICATION OF PREDATORY ANIMALS.

**STATEMENT OF HON. JOHN E. RAKER, A REPRESENTATIVE IN
CONGRESS FROM THE STATE OF CALIFORNIA.**

Mr. RAKER. I would like to speak on two subjects: First, the predatory animals; and, second, the rodents.

I am familiar, from personal observation, with the predatory animals, especially as regards sheep. This will also relate to cattle, horses, and to deer. I have been interested for a good many years

these outside matters, in addition to my profession as an attorney and for a time on the Bench. I do this to show that I have been over the country and am familiar with the destructive work that these animals are doing.

First, speaking of the wolf, the gentlemen here have described it, and I am not going to be cumulative as to that, because I think what they have presented is sufficient. As to the coyotes, you can not make it too strong. All over California, the north and the northern part, and in Nevada—California is on a long stretch bounded on the east side by Nevada, and in Nevada and also in Oregon on the north, there are many, many coyotes, and those three States have made every effort to eradicate the coyote. They have spent their money; they have given rewards, and they have destroyed many of them, but still they are many and exceedingly destructive.

The coyote in your band of sheep at night will kill 10 or 15 or more sheep. The Biological Survey has been doing wonderful work. The man in charge in Nevada and northern California has been so efficient that it is more than most of us ever expected could be done. In regard to the wild cat, it is the same. The wild cat will get into your corral overnight, and unless a dog wakens you or something alerts you, you can go out there in the morning and see from 25 to 30 sheep piled up.

Mr. MAGEE. Are they pretty thick out there yet?

Mr. RAKER. There are a good many. They will kill as long as they are in the corral, sheep after sheep. We offered a reward for these, and the Biological Survey, through its officers, in cooperation with the State and the various counties, have been doing splendid work. Now, in regard to the California lion, they are exceptionally destructive. They will take a calf or a yearling. They will kill it anywhere.

Mr. MAGEE. They are up in the mountains?

Mr. RAKER. They are up in the mountains and they are very wild and very savage and very destructive indeed. They destroy many of our young horses that we have turned out on the range in the winters, and people are doing all they can to destroy them. In the winter time, while we have our preserves and enforce our laws in regard to game, they are exceptionally destructive of the deer. It makes no difference as to the size. They are so built that they can catch them any place. They do not only stop with killing one. If they get a good place, they get as many as they want. The California lion has been one of the special efforts of the Biological Survey and the State. This appropriation will very materially assist in eradicating these mountain lions and this source of destruction. My collection is now that we offered \$20 a scalp for the California lion. I will add here a clipping from one of the home papers as follows:

Throughout the length and width of Lassen County, there are animals. Five mountain lions in five northern counties were killed last week; a bounty of \$30 is allowed on females; \$20 a scalp is paid for males.—Lassen Advertiser, December 31, 1920.

RODENTS.

Now, I want to speak in regard to the rodents. The ground squirrels are exceptionally destructive.

Mr. ANDERSON. Where are those? Is that what we call the pocket gopher, out in our country?

Mr. RAKER. He is a little fellow, about 8 inches long. When he gets into a field of grain he swells up to three times his ordinary size. There are millions of them. They are very, very destructive.

Mr. MAGEE. A species of the chipmunk?

Mr. RAKER. Oh, no. The chipmunk is more out in the timber. The other is the ground squirrel.

Mr. MAGEE. What color are they?

Mr. RAKER. They are brown.

Mr. MAGEE. The gray squirrel?

Mr. RAKER. No. We call them the digger squirrel.

Mr. MAGEE. That is our gray squirrel. I think.

Mr. RAKER. He is as large as the gray squirrel, but he has not such a bushy tail. They can actually mow off 160 acres in a couple of weeks, so that a man will really lose his crop.

Mr. MAGEE. His crop of what?

Mr. RAKER. Grain, wheat, barley, oats, cotton. They will take a garden and destroy it; also alfalfa and clover. Our people have county officials whose business it is to assist in this work. The county and the State expend moneys. Both of these animals are very destructive. Rabbits would come under the same category. We have many rabbit drives and many thousands of them are killed. They are destroying them at other places in the same way. The Biological Survey, through its officials, in cooperation with the State, have greatly minimized this in many places. There are certain counties that have almost eliminated them. It is not only in my State, but I have seen it in Oregon and Nevada. I have had occasion to go up there quite frequently, and of course along on the Nevada side it stretches along my district in the neighborhood of nearly 300 miles, and I go through Nevada quite frequently.

I want to call this to your attention: In the northern part of the State, and in fact the southern part and along on the easterly part of the State, there is one forest reserve after another, and we have them in Nevada and we have them in Oregon. The Federal Government is making quite a strong effort to do this work on the reserves, so that you can see that the State is doing its part. I want particularly to call this to your attention with relation to California: We passed a law some six years ago that throws the jurisdiction of the extermination of rodents into the hands of the board of supervisors—that is, our governing board; some call them commissioners, but we call them supervisors. You are notified to exterminate the rodents on your land, and you may be adjoining a forest reserve. Now, if you fail to poison, trap, and kill the rodents to the best of your ability the board of supervisors directs its agent to go upon your place at your expense and to destroy these rodents, and that bill of expense is certified to the board of supervisors, and it becomes a lien upon your property. The district attorney is directed to proceed and sell your property, and your property can be sold for the cost of the destruction of the rodents, although you are adjoining a forest reserve where there is no effort made on the part of the Government.

You can easily see that unless a sufficient appropriation is made to assist in the extermination of these rodents on the forest reserves,

which is a perfect breeding ground for them, my place can be taken from me to pay this expense. So that you see that not only the local authorities, but the State authorities, have been doing all they can in the way of appropriations and passing laws for that purpose in connection with the National Government, and even placing the burden that they can sell your property for this destruction, when right on the side of your place, or maybe two sides of it, there is a forest reserve. I am not complaining. I want to present the facts to you gentlemen from my observation. I have met their agent out there—Mr. Sands, of the Biological Survey—and he has been doing wonderful work on the predatory animals and on the rodents, backed up by Dr. Fisher and his splendid corps of assistants. We have been getting good work.

If you will pardon me a moment while I refer to this, when the rabies was on it got among the coyotes and the other wild animals and simply swept that country, and people lost thousands of dollars' worth of property. The State appropriated money, as well as Nevada and Oregon. This committee, through its appropriations, assisted, and we were able to use funds provided for the Agricultural Department, but we went to the boards of health, not only of our State, but to the Federal Government, to use their funds on the question of destroying them, so that we had all means at hand, and it was a thing that made a great deal of difference to us. We have seen the effects of it.

So I urge you gentlemen to give us this appropriation, if you can, for the good in the way of defending the sheep interests, the cattle interests, and the horse interests, as well as agriculture in general.

Gentlemen, I have seen places up along Goose Lake, from North Lakeview on up to Summer Lake, place after place, and the same way down in Lassen County, on Madeline Plains, where farmer after farmer would not have been able to harvest one-tenth of his crop where he had possibly 60 or 80 acres of land. It was practically destroyed by the rodents.

I thought that the committee would like to hear personal observation of one who has seen this matter and the effects of it, and what good it will do to get behind this and accomplish these results. I believe in telling the committee when I find a department doing splendid work that it is nothing more than fair to report it to you, and show that the Government agents which you have provided for have made a success in the work and you are getting a dollar's worth of service for every dollar that you expend.

Mr. MAGEE. Do these ground squirrels migrate? Do you know?

Mr. RAKER. Not much. They bore in the ground and come out in the spring. They seem to have a litter of from 1 to 15 about every three months and they grow so fast that you can not get rid of them. But if everybody joins hands and works together, you will get results and finally fully destroy them.

I thank you for the opportunity of presenting this matter to the committee.

Mr. ANDERSON. We are very much obliged to you, Mr. Congressman.

SATURDAY, JANUARY 8, 1921.

FOR ERADICATION OF PREDATORY ANIMALS.

Mr. ANDERSON. We will now take up the item in connection with the investigation of the appropriation for the western irrigation agriculture, item No. 93, page 98.

We will hear from Congressman Bee.

STATEMENT OF HON. CARLOS BEE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS.

Mr. BEE. I am not going to detain the committee very long.

I did not come to speak on the question of predatory animals, but we have got thousands of them in my district, and my city is a city of 160,000 people. A few days ago they killed a very large wolf within the city limits. We have got prairie dogs and ground squirrels and wolves and coyotes, and they are a great nuisance in that country.

Mr. ANDERSON. My county has been settled for 50 years, but they are still killing wolves there.

WESTERN IRRIGATION AGRICULTURE.

Mr. BEE. I especially want to speak to you gentlemen about this item for the experimental station at San Antonio, Tex.

If you will pardon me, I will read a letter from the Secretary of Agriculture.

DEPARTMENT OF AGRICULTURE.

Washington, December 22, 1920.

Hon. MORRIS SHEPPARD,

United States Senate.

DEAR SENATOR SHEPPARD: In reply to your inquiry of December 20 regarding provision for the continuance of the operation of the field station of the Bureau of Plant Industry near San Antonio, Tex., I would say that the estimates for the next fiscal year, now under consideration by Congress, make provision for resuming work at the San Antonio field station. This has been practically suspended since July 1, the suspension having been made necessary by the reduction in the appropriation for western irrigation agriculture. Only enough has been done during the past six months to prevent the heavy losses of crop and plant material which would have resulted from suspending the work at midsummer.

Provision has been made in the estimates for the Bureau of Plant Industry under the subappropriation "For investigations in connection with western irrigation agriculture, the utilization of lands reclaimed under the reclamation act, and in the areas in the arid and semiarid regions," for an increase from \$52,380 to \$94,420. A proviso has been made making \$11,000 of this sum immediately available in order that investigational work in western irrigation agriculture may be resumed at the three field stations at Hermiston, Oreg., San Antonio, Tex., and Fallon, Nev., where it was suspended June 30, 1920. The remainder of the increase, \$31,040, will be necessary to maintain the work of the existing stations through the next fiscal year under the higher cost of conditions of labor, travel, equipment, and materials which now prevail.

Very truly, yours.

E. T. MEREDITH, *Secretary.*

Mr. BEE. I will state that last year I had an interview with Mr. Meredith and also appeared before the committee, and tried to save the suspension of the work of these three stations, but was unable to do so.

The experimental station at San Antonio has been in existence some years, and it belongs to the Government. That part of the State of Texas is peculiarly situated. The experiments, by reason of the character of soil and the agricultural growths in that section, are not confined to one or two classes of products, but it covers everything from tropical plants to wheat, corn, cotton, vegetables, fruit, oranges, dates, and almost everything of that kind, by reason of the climate. It has done very remarkable work.

The Government has this property, and it is conveniently located and well equipped.

I sincerely trust that the committee will find it advisable to put it back into this appropriation. It was left out per se last year, but the appropriation was so reduced—I believe I am right about that—these stations were not expressly omitted, but the appropriation was reduced to such an amount that in the judgment of the Department of Agriculture, they were compelled to suspend these places.

The Secretary told me at the time I talked to him that he had a very high appreciation of the character of work that was being done at this station—its improvements, and its needs, but he felt that somebody had to go, and that went at that time.

I should be much obliged if the committee could grant this appropriation in accordance with the recommendation of the Secretary of Agriculture.

Mr. ANDERSON. We thank you very much, Congressman.

SATURDAY, JANUARY 8, 1921.

FOR ERADICATION OF PREDATORY ANIMALS.

**STATEMENT OF HON. NICHOLAS J. SINNOTT, A REPRESENTATIVE
IN CONGRESS FROM THE STATE OF OREGON.**

Mr. SINNOTT. Mr. Chairman, I want to confirm everything that has been said about the necessity for an appropriation for the destruction of these predatory wild animals. The stockmen in my district are personally paying for trappers, and offer additional bounties to the State bounty for the destruction especially of the coyote.

EXPERIMENTAL FARMS ON GOVERNMENT RECLAMATION PROJECTS.

The item I am particularly interested in is relative to experimental farms on Government reclamation projects. Due to the curtailing of estimates last year, the experimental work upon the Umatilla irrigation project at Hermiston, Oreg., was practically discontinued, although the State of Oregon had appropriated \$3,000 for cooperative work with the Government. This led to a great deal of embarrassment, politically, agriculturally, and otherwise. The Secretary of Agriculture was in Oregon, and he particularly commented on this and criticized Congress directly, and the Member from the district,

by implication at least, and some of us were blamed for permitting the discontinuance of this work, although the matter rested really in the discretion of the Secretary of Agriculture as to where he should expend the funds.

The people at Hermiston are very much interested in this project. They think it is doing a great deal of good for them. There are some very peculiar soils on that project and in the entire Columbia River Valley that require special study, and the project will be enlarged within the next year, because the Appropriations Committee, in the sundry civil bill, which passed yesterday, has made an increased allotment for work right adjoining, absolutely adjoining, this project, which will put into cultivation some 30,000 acres in addition to the area that is under cultivation now.

I have a letter from Mr. James T. Jardine, who is director of the Oregon Agricultural College, school of agriculture and experiment station, in which he goes into this matter very fully. Writing to me on November 23, 1920, he said:

MY DEAR CONGRESSMAN SINNOTT: By your letter of June 17 you transmitted to Director A. B. Cordley a copy of a letter from the Secretary of Agriculture relative to experimental work on the Umatilla project. The Secretary stated that it was his intention to submit to Congress at its next session an estimate for an appropriation to be made immediately available to carry on the work of the field station at Hermiston for the last half of the present fiscal year, January 1 to June 30, 1921. I am advised by representatives of the department that this emergency item is included in the Department of Agriculture estimates. From your knowledge of the situation on the Umatilla project and in the Columbia Basin, I am sure that you appreciate the importance of the Federal Government resuming cooperation in these investigations. Anything that you can do to secure favorable action by Congress on this emergency appropriation, and for an appropriation to continue the Federal cooperation after July 1, will be to the best interest of Oregon. I am sure, and will be greatly appreciated by the people on the Umatilla reclamation project. The few facts following may be of use to you in this connection.

The investigations at the Umatilla station apply to all sandy lands in the Columbia Basin. These include in Oregon the Umatilla project and adjacent small projects, totaling, perhaps, 75,000 acres, and the John Day project of somewhere near 300,000 acres. In Washington there are probably 25,000 acres of similar lands lying in the eastern end of the Yakima Valley, along the Columbia River, near the mouth of the Yakima, and some of the land lying east and southeast of Peace.

The present Umatilla project includes about 28,200 acres. Of this area about 10,000 acres is actually irrigated and farmed. When the project was started the consensus of opinion appeared to be that deciduous-fruit production would be one of the most important of its agricultural industries. As a result of this belief extensive fruit plantings were made by the earlier settlers on the project and investigational work was given over largely to horticultural questions. The experimental farm was located accordingly, and the size was limited to 40 acres in the belief that its size, the location to include coarse, sandy lands, would be representative of the future development of the project. Experiments over a period of years and results from farm practice have shown that the climatic conditions particularly, and the soil to some extent, are not well suited to the successful production of deciduous fruits. In recent years, therefore, the project has been devoted largely to the production of alfalfa and corn. As nearly as we can judge the conditions are similar over the larger part of the sandy areas of the Columbia Basin, of which the Umatilla project is fairly representative.

That covers over 300,000 acres.

Although the station has in recent years been studying problems other than horticultural questions and has done much in improving practice in the difficult problems of irrigating sandy lands, and something in the selection of crops best suited to the conditions, the investigations in these fields are merely a start, and the big problems of soil fertility, drainage, soil management, diversity of agri-

culture, including live stock, are practically untouched. At the same time both farmers and all investigators concerned agree that it will be unwise and unsafe to continue with any degree of permanency the present essential one crop (alfalfa)—unwise because the continuous growing of one crop and shipping the produce off the land is not consistent with maintenance of soil fertility and permanent agriculture, and unsafe because of fluctuations in demand and in price of alfalfa, the constant danger of such pests as alfalfa weevil, which might bring temporary disaster through quarantine of the entire crop, and because it does not provide labor income throughout the year, which might mean much in case of close margins of profit. The weevil already is in Oregon in Malheur County, and the price of alfalfa is not all that it might be. Instead of reducing or discontinuing the investigational work at this time, both farmers and business men on the project and the investigators concerned feel that the investigations should be expanded to include methods of irrigation, duty of water, varietal tests with crops, rotations for soil maintenance and fertility, fertilizer experiments, and comprehensive study of live-stock production problems. For these reasons the State has continued the station as best possible since the withdrawal of Federal support July 1, 1920.

He means by that the State went on and spent its money, notwithstanding the fact the Government did not make any contributions.

The main reasons then for continuing the investigations and urging resumption of the Federal cooperation by the emergency appropriation included in the Department of Agriculture estimated and later by resumption of the regular appropriation are:

1. The Umatilla reclamation project of about 28,000 acres, of which about 10,000 acres are actually irrigated and farmed, is fairly representative of 300,000 to 400,000 acres of sandy lands within Washington and Oregon in the Columbia Basin.

2. Owing to their sandy soils, and to some extent climatic conditions, these lands have problems peculiar to themselves in water requirements, water distribution, and soil management.

3. No other experiment station in Oregon or elsewhere is working under conditions such that results secured will be applicable in anything like full measure to the Umatilla project and similar lands.

Mr. ANDERSON. Right there, Mr. Sinnott, I think the committee, in reducing this appropriation last year, possibly in error, had in mind that the conditions of western irrigation agriculture were not so dissimilar in different localities that it was necessary to maintain a number of different experimental stations in order to cover the different character of agriculture in which the people were engaged. That statement would rather indicate that the committee's view on that question was not entirely sound.

4. The growing of deciduous fruits has proven unprofitable as a commercial industry on the project, and consequently the form of agriculture must be changed from what was originally expected and broadened to include a variety of farm crops and live stock. In this future development the farmers need help in working out profitable agriculture for the conditions of the project and similar lands.

5. The Federal Government should cooperate in the investigations because the lands immediately involved are primarily within a Federal reclamation project; the Umatilla experiment station was originally started and has been maintained by the Federal Department of Agriculture, the Federal Reclamation Service, and the State of Oregon cooperating; the problems under investigation are common to lands in Washington and Oregon and to similar sandy lands in other States; it is perhaps reasonable to assume that the Federal Government will be involved in the reclamation of 300,000 acres additional similar lands, which have been examined by engineers and agriculturists and classed as feasible projects, because of the large expenditures involved.

The John Day project has been reexamined by both engineers and by representatives of the Oregon agricultural experiment station during the past summer, and I understand that it has been classed as a feasible project, although I have not seen the engineer's report. This project represents one of the big

possibilities of agricultural development in the State of Oregon, and its development must be expected if we are to look ahead. The agricultural problems should be anticipated as far as possible, so that the agricultural part can be made successful without long delay. The Umatilla station is the only one prepared to study these problems.

Very truly, yours,

JAMES T. JARDINE, *Director.*

That sets forth the matter better than I could myself. Now, I have communications from a number of organizations in that vicinity advocating the continuance of this project, and I will not take up the time of the committee to read them, but I received letters from the following: Columbia Community Committee of Umatilla County Farm Bureau; Hermiston Community Committee of Umatilla County Farm Bureau; Hermiston Commercial Club; Boardman Community Committee, Monon County Farm Bureau; and Boardman Commercial Club.

I believe this is a very worthy project, and it is one that is typical of several hundred thousand acres of land, both in Oregon and in the State of Washington and possibly some in Idaho.

SATURDAY, JANUARY 8, 1921.

CONSERVATION OF WILD LIFE.

STATEMENT OF MR. T. GILBERT PEARSON, PRESIDENT OF THE NATIONAL ASSOCIATION OF AUDUBON SOCIETIES FOR THE PROTECTION OF WILD BIRDS AND ANIMALS.

Mr. PEARSON. I am president of the National Association of Audubon Societies for the Protection of Wild Birds and Animals. This, Mr. Chairman, is the oldest and probably the best known organization in this country or any other interested in the conservation of wild life.

We have north of the Rio Grande 1,200 distinct varieties of birds. Less than 100 of those are migratory game birds that can be killed at the present time. We have estimated that there are 7,000,000 men who hunt. There are in the neighborhood of 93,000,000 people, therefore, who do not hunt but who have an inherent interest in the wild bird life of the country, not only on account of the value of the game as food, but on account of the recreational value of the game, that takes them into the field to get exercise, and they have a great interest in the economic value of these wild birds, many of which are known to consume more than their own weight of noxious insects every day.

When this original bill was before Congress for hearing, it was I who put in an appeal for the protection of the migratory nongame birds. Out of 32 organizations represented at that hearing I alone objected to the bill as it stood and asked that a provision be put in to protect the migratory nongame birds, for those are the birds which most people are vitally interested in, that is the interest reaches much further, and there was general agreement to that without any trouble, and the matter was put in.

At this time the funds are absolutely and woefully inadequate for enforcing a provision of this sort. The State of New York, spend-

ing over \$200,000 a year on game conservation, is unable to enforce the State laws adequately. Not less than 17 men were hunting in Van Cortlandt Park last Sunday in violation of the law, as reported to me by observers who were there.

Mr. RUBEY. I am glad to hear that go in the record with the statement that was made a moment ago about Missouri.

Mr. MAGEE. What do they kill there?

Mr. PEARSON. We have here in the East, you know, a very large alien and semialien population, Italians particularly, who have all their lives shot everything they had an opportunity to shoot in the way of wild-bird life for food.

Mr. MAGEE. What do they shoot in Van Cortlandt Park?

Mr. PEARSON. Cedar wax wings, robins, or any small bird. Those are direct violations of the Federal law.

Mr. MAGEE. Do they have any difficulty in New York in getting convictions for such violations of the law?

Mr. PEARSON. Practically none, or very little. Sometimes a judge gets tired, and thinks a particular case is trivial. Perhaps some judge has not been educated properly as to the value of the birds, and thinks that bringing a man in there with a string of birds is a trivial matter.

Mr. MAGEE. Is this park within the limits of New York City?

Mr. PEARSON. Yes, sir.

Mr. MAGEE. And these hunters went into a public park and killed birds of that character?

Mr. PEARSON. This was simply reported to me.

Mr. MAGEE. You do not know this of your own knowledge?

Mr. PEARSON. No. These things are reported to me in great numbers, and I report them to the State for investigation.

Mr. MAGEE. It seems to me there might be reasonable grounds, perhaps, for an erroneous statement.

Mr. PEARSON. Possibly there are.

Mr. MAGEE. It would not seem possible.

Mr. PEARSON. Every month a large number of convictions for violations of the law of that exact character are reported to me, and that is the report made to me.

Mr. MAGEE. I mean 17 persons killing birds in Van Cortlandt Park in one day.

Mr. PEARSON. We reported one man supposed to be hunting in that section to the warden—on Sunday a great deal of hunting goes on—and they later reported that they did not find this man but found five others in the immediate neighborhood hunting. That is a matter of record.

Mr. MAGEE. Do you know what the area of that park is?

Mr. PEARSON. I do not know. It has quite a large area. It runs from the Dykeman section up to Yonkers, but is a matter of common knowledge to those who are intimately associated with matters of this kind that these violations are numerous all over the country.

The appropriations for the enforcement of these Federal regulations have been small, \$30,000 a year up, until year before last when, I believe, it was \$150,000, and then last year approximately the same, I believe, or somewhat less, and the Secretary, I believe, is asking here for \$200,000. You realize that that is wholly inadequate. A very large sum must be provided some day, if the ideas of the people who are enforcing these laws are to be carried out.

I am a member of the advisory committee appointed by the Secretary of Agriculture to advise with the Biological Survey on the matter of regulations which are made under this treaty act, and this question of appropriations for the enforcement of the law has been a matter before us all along. We realize the enormous expenses of the Government, and have been casting around for some means of providing funds for adequately enforcing these laws. Our committee something like a year ago at a meeting favorably approved that proposition presented by one of our members—the proposition may have been made elsewhere; I do not know—on the subject of having a Federal hunting license and using that fund for the enforcement of the law. Our committee unanimously approved that, and the National Association of Game Wardens and Commissioners has formally approved of it.

There has been much publicity in the sportsmen's magazines, and I personally have been responsible for a good deal of publicity in the general press of the country on the subject, and we have had most favorable reports from State officials, from sportsmen's organizations, and the officials of the Audubon societies, and bird clubs generally throughout the country, as well as from a large number of individuals. So the feeling at the present time on the part of this committee to which I have just referred is that the time may be ripe before very long to present the matter to Congress of having a Federal license, the funds from which will be used for the enforcement of these laws, and this appropriation we are looking at at the present time only as a temporary matter until the license law can be enacted.

Mr. BYRNES. Your contention is that you may penalize a man for shooting game in a State without a license from the Federal Government?

Mr. PEARSON. No; the license would be to hunt migratory game birds.

Mr. BYRNES. He can shoot at any game birds, provided it is not a migratory bird?

Mr. PEARSON. It would not come under the jurisdiction of the Federal Government if he did. That would be a State matter.

Mr. BYRNES. Then, if he shot at a migratory bird, the act of shooting would be a matter under the jurisdiction of the Federal Government?

Mr. PEARSON. Yes.

Mr. BYRNES. But in the case of the bird, the theory was that the bird was traveling from State to State.

Mr. PEARSON. Not only in the act of traveling, but a species that actually does travel from State to State.

Mr. BYRNES. In the case of the man that did the shooting, he might not travel from State to State, and he might not shoot over the borders of the State. Do you think you could cover that case?

Mr. PEARSON. That Federal license would be a United States license, good only in the United States. However, he would have to shoot in accordance with the State laws.

Mr. BYRNES. Suppose a man did not want to take out a license. Your idea is that you would have the power to enforce him to take out a license?

Mr. PEARSON. It would be a violation of the game laws: yes, sir. These ordinary local laws are in operation all over the country.

Mr. BYRNES. That is quite different. You are proposing now a proposition that certainly has not been in operation, to require a man to take out a license to shoot entirely within a State at a bird.

Mr. PEARSON. I am proposing the proposition, or suggesting it here, which amounts to a regulation for the enforcement of this law, whereby a man who wanted to hunt migratory birds anywhere in the United States would have to take out a license under the United States game laws for permission to shoot migratory birds under the provisions that may be set forth by the State laws.

Mr. BYRNES. The term of migratory bird went a long way, my good friend, under the Constitution, on the theory that the bird was traveling from State to State, but when you attempt to reverse the proposition and say that you can control the actions of a man shooting at a bird, that is an entirely different proposition.

Mr. PEARSON. Not at all. The methods are already set forth in the regulations by which they can shoot them, and those laws are being enforced to-day.

Mr. BYRNES. There is a distinction which it is useless for me to take the time to argue with you. I am satisfied that there is a distinction that will prevent the Congress from enacting any such measure, as much as I am in favor of all such measures.

Mr. PEARSON. Of course, that is a matter to be taken up.

Mr. MAGEE. If the gentleman from South Carolina is correct in his legal conclusion, then the law would not be of much use?

Mr. PEARSON. It would not.

Mr. MAGEE. And if a man shot a migratory bird passing through any State, the law would not be of much effect?

Mr. PEARSON. I imagine not.

Mr. WASON. Let me put this question: Would not that mean that a hunter who wanted to pursue migratory birds in the open season, for instance, from New York State into my State, would have to get a license to be found at large with a gun in his hand—hunting—he would have to carry two licenses?

Mr. PEARSON. Yes.

Mr. WASON. I will put another case, in reply to my friend Magee, who is an expert on woodchucks, but does not know that we kill them in New Hampshire, and they are not protected, and do not come under the class of robins and other song birds. Suppose that I have not even a hunter's license in my possession, and do not want it, do not need it, but upon a small plantation that I live on I find a migratory bird doing some damage to some of my crops—under our law, decided in 1863, the State law, I can defend my property and kill the fowl, if necessary. Do you think the Federal law could prevent me from protecting my property under such a situation?

Mr. PEARSON. The Federal law has a provision to cover that point.

Mr. WASON. What is it?

Mr. PEARSON. If birds are found doing damage to private property, the Secretary of Agriculture may grant permission for killing the birds.

Mr. WASON. But our State constitution does not provide that I shall come to Washington to get a permit from the Secretary of

Agriculture, because the damage will have been done and the bird gone and another coming.

Mr. PEARSON. Those are legal, constitutional matters. I am simply a naturalist and conservationist, and trying to confine my remarks along those lines.

Mr. ANDERSON. In view of the fact that you find members of the committee disagreeing on the legal points, we could hardly expect you to pass an expert opinion.

Mr. PEARSON. I want to say that we have been cooperating with the Government for years—the association with which I am connected. Up until the game law went into effect a year ago this last July that no Federal agent could receive a salary from a private corporation we have been cooperating financially in the payment of wardens on United States bird reservations. It was through our activities that these reservations were established in the country.

Up until July a year ago we cooperated with the Government, and some of our patrol boats that they are using to-day are owned by our association, and to-day we are from time to time cooperating in a great many ways. There were a great many violations in Florida last year. The Biological Survey needed some men down there, and they did not have enough money in the Treasury, and I raised \$1,600 among my friends and members of the Audubon Society and sent down two men for their use from Maine. The suggestion presented here is for the payment for a hunting license. There were a great many violations reported to me in Florida, and I immediately communicated with the Biological Survey, and when the situation was wired to me I got two men together to go down there and look into the matter.

Mr. ANDERSON. They are probably not doing very much in Maine and Michigan right now.

Mr. PEARSON. They always have numerous violations of the law, so the Audubon societies for the protection of the birds desire the enactment by Congress of a law requiring a license to kill birds.

Mr. WASON. Do not get the idea that I am hostile, because I belong to the Audubon Society in my locality, but we do kill woodchucks.

Mr. PEARSON. I have attempted to answer the questions the best I could from my own knowledge.

Mr. ANDERSON. Is there anything further, Mr. Holland?

Mr. HOLLAND. That is all.

Mr. ANDERSON. The committee will take up the next item, item 32 on page 199, for investigations, experiments, and demonstrations for the welfare, improvement, and increase of the reindeer industry in Alaska, and will hear Mr. Lomen, of Alaska, on the item.

SATURDAY, JANUARY 8, 1921.

REINDEER INDUSTRY—ALASKA.

STATEMENT OF MR. CARL J. LOMEN, REPRESENTING LOMEN & CO., A CORPORATION, NOME, ALASKA.

Mr. LOMEN. Mr. Chairman and gentlemen of the committee, I have been a resident of Alaska for more than 20 years, and have been keenly interested in the reindeer industry since my first winter.

I have been financially interested in the development of the industry since 1914. I represent Lomen & Co., a corporation, which is the pioneer in the development of the reindeer industry along commercial lines.

In 1892 the first reindeer were imported into Alaska, 171 in number; during the following 10 years there were 1,109 more, 1,280 in all. From that beginning there were some 10,000 animals in the herds in 1905, 27,000 in 1910, more than 70,000 in 1915, and more than 200,000 in 1920. In addition to that, since the time of their importation more than 100,000 have been butchered for food and clothing. Given another 10 years, Alaska will range more than 1,000,000 animals, a number far greater than the total present herds of Norway, Sweden, and Finland combined.

The reindeer were introduced primarily as a means of support and vocational education for some 20,000 Eskimos, and the ownership of the reindeer at the present time is held approximately as follows: Three-fourths are owned by Eskimos, and one-fourth by the Government missions, Laplanders, and whites.

What are the future potential possibilities of this industry? It is the only industry which can maintain a stabilized population in large areas of the territory, especially north of the Yukon River. It will become one of the important sources of meat supply of the Nation. The importance of this is realized when one considers the constantly diminishing grazing areas of the western part of our country and our ever-increasing population.

During the current year there were available for the market in Alaska approximately 20,000 animals, with a meat value of three-quarters of a million dollars. Within 15 years the number of animals will exceed 4,000,000, with more than one-quarter of that number available for the market each year. Figuring the present weight of the animals, and the present valuation of 23 cents a pound at Nome, the industry should at that time produce annually more than \$45,000,000.

During the past season 1,600 carcasses, of approximately one-quarter million pounds weight, were shipped from Alaska to the United States.

Mr. RUBEY. What is the average weight of a carcass?

Mr. LOMEN. Approximately 150 pounds, and the value of this year's shipments was approximately \$60,000. The balance of the meat was used in Alaska for local consumption.

The coming season, 1921, provided we have transportation facilities, there will be shipped more than 5,000 carcasses, or about three times the number that were shipped in 1920.

The company of which I am an official are the pioneers in establishing the industry on a commercial basis. We have four cold-storage ammonia plants located on the Alaskan coast accessible to the larger herds and deer centers at Keewalik, Nome, Golovin, and Egavik. These plants have facilities for handling more than 12,000 carcasses annually at this time, and other plants will be constructed to meet the steady expansion of the industry. These cold-storage plants for the first time make possible the shipment to the United States of the reindeer meat, which could not otherwise be transported.

Because of the future possibilities of the industry, and the urgent need of organization, supervision, and study, Congress last year

appropriated money for the Bureau of Biological Survey to establish a reindeer experimental station in Alaska for the purpose of studying the herds and the grazing areas. This organization has already performed some remarkable work to my personal knowledge, but the money appropriated is insufficient to meet the urgent needs of the situation. The country is vast and the herds many and widely scattered. The lack of funds forced the bureau to confine its work to a very small area of the reindeer country, and in that connection I would like to make a few remarks in reference to the size of our territory.

It probably is known to the members of the committee, but to put it in the record, Alaska is approximately one-fifth the size of the United States. We, in Nome, are farther west than the Hawaiian Islands. The herds are scattered along the coast from the Peninsula of Alaska to Point Barrow and the Canadian boundary, a distance of about 2,000 miles. The distance from the extreme points of Alaska is approximately the same as the distance from Cuba to Greenland.

The Biological Survey during the summer of 1920 established an experimental station at Unalakleet, which is about 150 miles southeast of Nome. They have four experts at that station. Those men are handicapped because it is impossible for them to move with the necessary freedom. They have no boat, and there are no regular transportation facilities. They are doing wonderful work, but I will take that up a little later.

With reference to some of the needs of the industry, the continued scientific study of the diseases and parasites that now retard the growth of the animal and of the industry is necessary; also the correction of the present system of uncontrolled breeding of inferior animals by the introduction of proper methods, and by so doing practically doubling the weight of the animal and the value of the industry.

I am told by the experts of the Government bureaus here in Washington that it will be a very simple matter to probably double the weight of those animals by selective breeding, and one system which will be introduced will be the crossing of the reindeer with the wild caribou of Alaska, which will be very successful and produce a larger and heavier animal.

Mr. BYRNES. If you know that already, how can the department serve you?

Mr. LOMEX. The department can serve us in this way. The taking of caribou for breeding purposes in the first place, is under the jurisdiction of the Department of Agriculture. They are far removed from our section. The fact that three-quarters of the industry is in the hands of the Eskimos, who are wards of the Government, and that the herds are scattered over more than 2,000 miles of territory, the fact that there are very few white people interested in this industry, makes it very difficult to control. Our company is practically the only one that has done anything toward establishing the industry on a commercial basis, of correcting some of the breeding methods, and trying to control the breeding.

We have transferred new blood to various herds over hundreds of miles of the Alaskan country in summer and winter, and introduced new blood in some of those herds that are 20 years old and have

never had any new blood. We can not assist the Eskimo. It is impossible to do that. We do everything possible. There are Eskimos who own reindeer in our own herds, but in all our experiments they are never charged with any expense of the introduction of new blood, nor in the construction of our corrals. No part of that expense is ever charged up against any Eskimo owner who may have deer in our herd. The fact, as I say, that three-quarters of the industry is in the hands of the Eskimos prevents any effective work being done for the development of the herds except through the governmental bureaus.

Mr. BYRNES. But if the object of the experiment is to ascertain whether or not the size and the weight of the reindeer can be improved by crossing with the caribou, and you say that is already discovered, what is the use of the department making an experiment to ascertain that?

Mr. LOMEN. That is just one of the things the bureau can do.

Mr. BYRNES. I just want to ask about that thing.

Mr. LOMEN. That is not the entire reason for asking for this appropriation, but one of several things needing attention. The Biological Survey has already established one reindeer experimental station for the study and control of the diseases and parasites, and to study the grazing problems, and needs more money to carry on that work.

Mr. ANDERSON. It is not an established fact, is it, that the caribou can be crossed with the deer on a commercial basis successfully?

Mr. LOMEN. Not on any organized or commercial scale. Such crosses have occurred occasionally here and there, and the finest animal I have seen in the reindeer herds has been from such a cross.

Mr. BYRNES. They are much heavier, are they not?

Mr. LOMEN. They are heavier and larger animals. I will come back to that, because I think I touch on some of these subjects a little further in my notes, and then I will be glad to take up any questions.

Mr. WASON. Does the quality of the meat improve with this crossing that you speak of?

Mr. LOMEN. The caribou and the reindeer are the same type of animal, the caribou being the wild animal and the reindeer the domestic animal. The reindeer was domesticated in the Old World and is perhaps the oldest of the domestic animals. The reindeer antedates the cow and the horse. The early records from southern Europe, the earliest records are of the reindeer.

Mr. WASON. But you say the quality of the meat, with this crossing, is not affected materially?

Mr. LOMEN. I have never been able to discover any difference in the quality of the meat. It is only that it is new blood, and with care used in the selection of the caribou stock, the crossing makes a much finer animal. We have both the woodland caribou and the barren-ground caribou in Alaska. The woodland caribou—the large and finer type—is what we want to cross with the reindeer. Three objects are to be gained by the Biological Survey work in the reindeer herds, first to learn the parasites and diseases affecting them and to work out methods of control; second, to study the grazing problems, which are becoming acute; and third, the working out of methods of building up the size and vigor of the reindeer through

introduction of wild caribou breeding stock and organized selection among the herds. There is great need of securing Government aid in correcting the present uncontrolled breeding, which we can not control, except in our own herds, because there is no fencing in the country, and the herds mingle more or less, and although one herd owner might be very careful to try and control the breeding in his herd, all the adjoining herds may be permitted to run free, and the mixture grades down all the herds. This must be corrected by the cooperation of all the herd owners through governmental assistance, as it is practically impossible to bring about otherwise.

Mr. BYRNES. How would it be possible then, by fencing?

Mr. LOMEN. No. It will be through the recommendations of the bureau experts, which recommendations will be accepted because of their ever-increasing reputation among the deermen of the bureau experts. The United States Government in 1898 brought from Norway approximately 100 Laplanders who were to instruct the Eskimos in the care of their reindeer. The Laplander naturally has the reputation for being probably the highest type of reindeer men in the world, but, as a matter of fact, the Laplander is very unprogressive and handles and controls his herd much the same as his forefathers did before him generations ago. To date the Eskimo has looked to the Laplander. In the future he must look to the Biological Survey. The Laplander, in the selection of his stock, castrates his large bulls, because he fears they will break down the females, and because they claim they kill too many of their animals. The breeding is left to the runts, which causes the stock to deteriorate. It is almost impossible to force them to castrate the surplus male fawns—which should be done. They let them run until they are 2½ years old, which results in their being entirely too many bulls in the herds, with no control over quality of the breeding stock. This system must be corrected, and the correction must, and will come, through the Biological Survey.

Here is an illustration of the expert work being done: Last summer the reindeer experimental station was established, and Dr. Hadwen, of the survey, spent eight days as my guest at one of our herds. One of the greatest pests we have there is the warble fly. Only a short time ago—in December, 1919—I had an article in the National Geographic Magazine on the reindeer. In that article I covered what was then known about the warble fly. Three days after Dr. Hadwen arrived at our herd he had disproven every statement I had made in that article on the warble fly, and I had the best scientific information then available. It took him three days to disprove all of that. He is still in Alaska, and he is experimenting by butchering the deer, one or two every week, all this winter, to follow the process of the development of that warble under the hide, and this summer he will know the life history of that warble.

He also formed the largest collection of those warble flies that is now in the world.

This shows the possibilities of the great good scientific men trained for that work can do the industry. That work is impossible for us. The warble fly is the greatest pest which affects the reindeer.

The next step will be to try to determine some means of ridding the industry of that pest.

Mr. MAGEE. What effect has it on the reindeer?

Mr. LOMEN. In July and August they worry the herd, either in the open or in the corral, and during the fly season the reindeer have no rest. They are frightened by the warble fly as it buzzes about them. The reindeer stand watching the flies, stamping their feet and running, the fly following them continually, and depositing its eggs in the hair on the backs and flanks of the animals. The fact that the egg is deposited seems to worry the reindeer. It tries to fight the fly. It will run after the fly and even try to crush it in the sands with its nose. The egg will hatch on the hair on the back of the deer, and the hatched worm works down and burrows into the hide, lies there and develops into the grub, which comes out the following spring and develops into another fly. The action of the warble perforates the hide, these perforations practically destroying the value of the hide for commercial purposes. The most serious effect of the warble fly is the stunting of the growth of the young deer, because during the time of their development they have no rest. The elimination of that pest will increase the growth of the young animal, and also permit the older animal to take on more fat during the open summer season when it has good feed, so that it can more easily withstand the rigors of the following winter. It is a very, very important part of the development of the industry in that country.

The Biological Survey will also retard, if not eliminate, the growth and spread of disease. It will regulate the grazing areas in order to conserve the moss and other vegetation necessary for the future of the industry. The reindeer during the wintertime subsists entirely upon moss. There is a sample of it on one of those pages. That is the only feed of the reindeer during the winter months. I have the idea that the deer could subsist on other foods, but they are not available, so the winter ranges must be conserved. The Biological Survey is now studying to determine how many deer should be grazed over a particular area of territory, and will determine methods of regulating the grazing areas, which is very necessary for the future of the industry.

It will also instill proper methods of herding, correct the present barbarous and injurious methods of castration, prevent the present method of the elimination of the best and larger stock from breeding, and commence to weed out the scrub stock. It is important that the Biological Survey conduct this work, because it can reach the Eskimo, whereas we can not, and no one else connected with the industry can; it must come through a governmental bureau.

The Biological Survey has already established an experimental station there; it has its technical experts on the ground; and it has already demonstrated its ability to get the desired results.

The great necessity for immediate action is, first, to prevent the growth and spread of disease which has already crept in; otherwise millions of dollars worth of property may be destroyed, with the resultant set back to the industry which will take years to overcome. Second, the upbuilding of the present stock, and the elimination of the present retardful and detrimental methods of breeding. And, thirdly, the preservation of the grazing areas. It should be made possible for the Biological Survey to employ a sufficient number of men to make a rapid survey of the reindeer territory, to establish

and maintain an experimental herd, and to purchase and maintain a power boat of sufficient size and speed to permit the experts of the bureau to visit the various herds along some 2,000 miles of coast. They are held at one point now, with no means of moving. They want to visit these herds north and south, and they are forced to wait there until some Eskimo boat comes along, some small schooner or some dory or skin boat, to take them to some other point. A power boat should be placed at their disposal so that they can move.

That is an open coast there, with few harbors, and the boat should be fast enough so that they can run from one point to another between storms, and so get in the shelter of the rivers and not risk their lives on that open coast. I have traveled up and down there a great many trips and it is not always a pleasure jaunt. They should be supplied with a boat in the summer time and with proper dog teams for winter travel. We have approximately seven months of winter in that section. I came out from Nome on the last steamer to leave there, on the 21st of October, and I can not return to my home until next June. I am frozen out and they are frozen in. The first boat that returns will leave Seattle approximately the 4th of next June.

Mr. MAGEE. Would you not rather be up there now than here?

Mr. LOMEN. No; I am enjoying it down here, but that section of the country is all right. I have spent but three winters out in 20 years, which should be proof that I like it and do not mind the climate.

I understand the Biological Survey has asked for an increase in the appropriation, to be used for these purposes, the estimate having been made after a very close study. I wish to urge the committee to approve the estimate. I think it will result in the greatest good and greatly advance the development of our Territory.

And before closing, as a resident of Alaska interested in the conservation of our resources, I also desire to urge the approval by the committee of the appropriation asked for, for the protection of that other great source of wealth in Alaska, the fur-bearing animals. The fur-bearing animals have been seriously endangered through the reckless and uncontrolled killing of the animals, owing to the lack of funds to maintain a proper warden system in that country. The animals are a source of great wealth and something should be done to assist in the conservation of that wealth in that country.

Mr. MAGEE. Who kill the animals, the natives or hunters from outside?

Mr. LOMEN. The natives; but I would say that the hunters are more destructive than the natives. The native thinks only of the value of the pelt and seldom kills a fur-bearing animal out of season, but the white hunters use poison and scatter strychnine over large sections of the country. It is against the law to do so, but they do it, and it is a difficult matter at the present time to control it.

Mr. MAGEE. You mean for the purpose of getting the fur?

Mr. LOMEN. For the purpose of getting the fur. There are very few in that country interested in the conservation of such game, and very little attention is paid to it. The Biological Survey, of course, have very few in their employ in that country, but they are asking for an appropriation for that purpose, and that should be granted.

This reindeer industry has been a hobby with me, in addition to being a business. I was interested in the industry long before I had any financial interest in it, and traveled to the herds and attended most of the reindeer fairs given in that country, and I realized the great future of the industry. As I say, it is an industry that has a tremendous future, and it will be only a few years before entire trainloads of reindeer meat will pass through Seattle and be distributed throughout the United States. Gentlemen, I thank you.

Mr. ANDERSON. Are there any questions, or anything further on this item?

Mr. LOMEN. I would like to ask Mr. Sheldon to speak a word or two on this same item.

STATEMENT OF MR. CHARLES SHELDON.

Mr. SHELDON. I am simply a hunter and lover of wild life in Alaska, and I have been very much interested in this reindeer industry there, having lived up there and passed a winter among the caribou. Mr. Lomen is thoroughly familiar with the reindeer subject and has said all that can be said in regard to it. I simply wish, being very familiar with the caribou in that country, to answer the question with regard to the possible relation of the Biological Survey to the interbreeding of the caribou and the reindeer, and what the Biological Survey can do to improve it.

That brings up a question of natural history which very few men are familiar with, as to the different varieties of caribou inhabiting the northland, and our extreme lack of knowledge as to the species of these caribou. The problem before the Biological Survey is to select the largest and finest specimens to breed with the reindeer. If we begin down in the southern part of British Columbia, we have one species.

I am not going into the technicalities of this. If you go a little farther north you have another species, which is supposed to be a very large one. On some ranges you will find that species up in the Yukon territory, but whether it goes into Alaska we do not know. Then you go on in Alaska along toward the coast ranges and you find another species of woodland caribou. We do not know exactly what that is. You go on the Alaskan Peninsula and there is still another species. Now, you go still farther north and you have a small caribou, which is called the barren-ground caribou, but we do not know its relation to the true barren-ground caribou. It is caribou which gather in very large bands and travel during the winter. There exist north of the Yukon River, in this area I just indicated roughly up in here, the woodland caribou. We have seen their heads and some skins, and they are supposed to be very large caribou, but we do not know what they are.

Now, before the best interbreeding can be obtained we have got to ascertain what those species of caribou are; we have got to find the best caribou to breed, and that is the function of the Biological Survey. The Biological Survey have made natural history surveys of most of the States of this country, and in an intelligent way in some sections of Alaska, but the animal that they know least about is the

caribou, because it is a very difficult matter to ascertain the limits of this wild caribou and its habits. In order to improve this reindeer stock they have got to send a man up in this country to investigate the various local races, if such exist, of these caribou, in order to determine the best species to interbreed with the reindeer.

I have been up there. I spent a winter in what is now McKinley Park and I have ranged over a great deal of the caribou country.

Mr. BYRNES. They have not that information?

Mr. SHELDON. They have not that information. They know less about the caribou than any of our hoofed animals. It is a restless animal that wanders widely. Of course, caribou have been killed everywhere, but we do not know their limits or where they are, and one of the very first things they will do will be to go out and see where they can obtain the best species for breeding.

That is all I care to say.

Mr. LOMEN. May I just add this? As far as the work of the Biological Survey is concerned, in common with other herd owners, we will naturally benefit materially from their findings in reference to the diseases of the animals. So far as the introduction of new stock is concerned, we are making the only big effort being made in that territory to-day. Last summer we transported from Golovin Bay to Nunivak Island, a distance of more than 300 miles, 197 head of deer—173 females and 24 males. We had to charter a large ocean freighter to transport those deer, which cost several thousand dollars, and in landing those deer on the island some 50 to 80 were drowned. Still that was a success. Now we wish to cooperate with the Biological Survey in an effort to secure some caribou stock to introduce on that island, castrate the male reindeer stock there, and develop a breeding stock which we can bring back from that island and introduce into our herds. We can then do all that is necessary in the way of breeding for our own herds, but we can not control the breeding of the deer in the Eskimo and other herds, and that is the part that the Biological Survey will do and, of course, assist us in every way possible. We are taking care of our own herds, but will need the cooperation of the Biological Survey and will derive benefit from the expert knowledge of that bureau in the elimination of disease and the conservation of our grazing areas and the protection that we will get from neighboring Eskimo herds because of the improvement of that stock.

Mr. ANDERSON. Mr. Bodenhamer, who represents the printers in the Weather Bureau, wishes to make a statement in regard to their salaries. The item occurs on page 27 of the Book of Estimates.

SATURDAY, JANUARY 8, 1921.

INSPECTION AND QUARANTINE WORK.

Mr. ANDERSON. The committee will take up item 58, on page 46, and will hear from Mr. H. H. Halliday, representing the animal industry of the State of Michigan.

STATEMENT OF MR. H. H. HALLIDAY.

ERADICATION OF TUBERCULOSIS.

Mr. HALLIDAY. I appreciate very much your giving me this opportunity to speak to you before taking my train for Lansing. I will only take a few minutes of your time, because I realize you are busy. The farmers of Michigan appreciate this work more than I can express to you. When the work started in Michigan the Bureau of Animal Industry of the United States Government asked us to cooperate with them to the extent of the then existing small number of herds; since that time the cooperation has increased until now nearly everyone who has pure-bred cattle wants the cooperation of the State and the Federal Government in the eradication of tuberculosis. If we solicited we could procure practically every man who has a pure-bred herd, but it has not been our plan to solicit from any man, but to allow men to make application as they desired. At the present time we have something over 600 herds on the waiting list and under State and Federal supervision.

Mr. ANDERSON. That includes all that have been tested the first time?

Mr. HALLIDAY. Yes, sir.

Mr. ANDERSON. And of those on the waiting list you have the entire herd under observation?

Mr. HALLIDAY. Yes, sir; and each day brings in more applications. Every mail brings in an application or so. At the present time we have approximately 160 herds that have passed two tests and are fully accredited. We have about the same number that have passed one clean test and will be accredited, most of them, at the next test. The work has been so satisfactory in the State that we feel it should be extended to the fullest extent with a view to completely controlling tuberculosis in our State and eventually in the Nation.

I take it up from the point of view that it is a public health proposition; that it means much to the health of the Nation whether we have clean cattle that will furnish a clean, healthy supply of milk, as milk, as we all know, is the most essential food product for the young—not only for young animals, but for the young child. A great many of our babies are brought up on cow's milk.

In the State there was so much interest that many of the cities are enacting tuberculin-test ordinances, and our work is expanding in that way, and men with pure-bred herds feel that they want the careful supervision from the State and Federal Governments on account of the fact that their cattle are very valuable, and they need all the protection they can have so that no mistakes will be made.

We have been very successful in getting these herds cleaned up, and some of them were very bad. In going over our records, we find that in starting out we had approximately 6 per cent of reactors from the cattle, and now it has run down until it is about 2½ per cent of the cattle which have been tested once, so that you see that we are gaining ground, and we feel that in a short time these appropriations will not be so necessary, because after we have gone over the ground carefully once or twice then the percentage of reactors will be very small indeed.

We have men in the legislature now, which just convened, who are anxious to present a bill asking that all the dairy cattle supplying milk for human food shall be required to be tuberculin tested. This is a tremendous proposition to handle, especially where it is desired to cut down appropriations, but at the same time I believe that the time is coming when our State at least will take up the proposition in that way, and we feel, or I do at least, that the quicker done the less expense it will be, because the condemnation of those that are still held in herds, that are badly diseased, that are spreaders of the disease, will make it more expensive for the State and Federal Governments to clean up the herds.

Mr. ANDERSON. How much has Michigan been spending on tuberculosis?

Mr. HALLIDAY. Last year we spent \$104,000 approximately, and this year we are asking for \$100,000 more.

Mr. ANDERSON. Is that including indemnities?

Mr. HALLIDAY. Including indemnities.

Mr. ANDERSON. How does it divide up between indemnities and cost of administration?

Mr. HALLIDAY. We have no limit on the administration; that is, there is no specific sum for that particular work. Our work is so much for administrative work in our development of all the work that is carried on, but the indemnities can not be more than \$100 for a pure-bred animal, or more than \$50 for a grade animal, that the State will pay, together with salvage, if there is any, from the carcass.

But this year we are asking for \$150,000 for indemnities and additional inspectors to match the number of inspectors the Federal Government will put in. We also asked last year for \$30,000 from the emergency fund, as our \$75,000 asked for last year, or appropriated, was exhausted, and they granted \$30,000 from the emergency fund. The State of Michigan has an emergency fund of \$500,000 to take care of State matters, and I feel sure that at any time our indemnities are exhausted I can go before the board of auditors and ask for additional amounts, and they will be granted.

Mr. MAGEE. You mean that \$500,000 would have been available if you had used all of that amount of \$104,000?

Mr. HALLIDAY. The emergency fund is for whatever emergencies might arise.

Mr. MAGEE. What I mean is, did you get as much money as you could reasonably have used, in stating your amount, \$104,000?

Mr. HALLIDAY. Last year you mean?

Mr. MAGEE. Yes; from the State of Michigan.

Mr. HALLIDAY. I think we could have gotten more, but we did not know this work was going to grow so fast.

Mr. MAGEE. Did you get as much as you asked for?

Mr. HALLIDAY. Yes, sir; but I think we could have gotten more if we had asked for more, but we did not realize that this work was going to grow so fast.

Mr. MAGEE. Can you give the committee any estimate of the percentage of dairy cows affected with tuberculosis?

Mr. HALLIDAY. Yes, sir; I think I can. I feel pretty certain from the facts I have gleaned and the figures I have that approximately

3 per cent of the dairy cattle, as they run through the State, would be affected. Here is an illustration. I have found that Parke, Davis & Co., of Detroit, handle a great many Michigan cattle that are picked up all through the State—that come from all parts of the State.

Mr. MAGEE. Do you know whether that percentage varies in different States and localities?

Mr. HALLIDAY. Yes, it does; but what I had reference to is this particular knowledge that I have that the cattle which Parke, Davis use, which are brought from all sections of the State of Michigan, are young cattle, yearlings, and there would not be so many of those affected probably as the older ones, but probably 1 per cent of those are affected with tuberculosis. We feel that that is one argument, if we had the funds, to go ahead and push the work as we would like to do.

Mr. ANDERSON. Infection is much greater among hogs than it is among cattle, is it not?

Mr. HALLIDAY. The hogs seem to be very susceptible to tuberculosis. Wherever you find cattle affected with tuberculosis you will find hogs and chickens affected. On nearly every farm you will find hogs and chickens affected.

Mr. MAGEE. Take the cattle other than dairy cows. How does the percentage run on those?

Mr. HALLIDAY. Probably it is about the same. It would not vary very much, although the infection of the dairy cow is the most serious. and her condition is such that she would be more susceptible, perhaps, because she is confined to closer quarters than the animal which is kept for beef purposes.

I want to assure you that the State of Michigan appreciates very much the work which has been done by the bureau, and its activities in the control of contagious diseases among animals, and we trust that this cooperation may be extended. The men whom you have here working with us are men of ability and fine experience, and we appreciate that ability and the experience which they have and the cooperation which they are giving us.

I thank you. If there are any questions I would be glad to answer them.

Mr. WASON. How many did you say you had in your accredited herds now?

Mr. HALLIDAY. There are approximately 160 fully accredited, those that have passed two annual or three semiannual tests.

Mr. ANDERSON. One hundred and sixty?

Mr. HALLIDAY. Yes.

Mr. ANDERSON. I understood you to say 600.

Mr. HALLIDAY. No; 600 is the number we now have on our waiting list and under supervision. We have only taken this work up in the last two years. We have had it under supervision for about two years, and we started with two men. It was gradually increased until now the Government has six and we have six.

Mr. WASON. You say that those accredited herds have passed two tests?

Mr. HALLIDAY. Two annual or three semiannual.

Mr. WASON. And after they are once accredited how often do you inspect them?

Mr. HALLIDAY. Once a year.

Mr. WASON. And that is done at the expense of the owner?

Mr. HALLIDAY. We are expecting to turn these fully accredited herds over to local veterinarians that we can trust to make these tests. In fact, we are carrying on a campaign now to educate these local veterinarians—the best of them in the State—to take over these fully accredited herds, and the expense of that work will be borne by the owner. It is our plan, as fast as these herds are accredited, to shove them back to the local veterinarians who have passed an examination, and not unless they have passed an examination and have shown ability to do this work. When these herds are returned to them we will take on additional herds, and we will keep this thing moving until eventually we will have them all.

Mr. WASON. What is the approximate cost to the owner per head?

Mr. HALLIDAY. So far as the work of the State government is concerned, it makes no charge, except they have to care for the man when he is there, but when they are taken over by the local veterinarian he will probably charge in the neighborhood of \$1 a head up to a certain number, 20 cattle, and then a less amount as the herd increases in size.

Mr. WASON. Do they make these inspections or tests in a dairy herd all at the same time? For instance, you say semiannually or annually. Are those annual tests made at a particular date?

Mr. HALLIDAY. Yes; we try, if it is an annual test, to make it within a week of the year, or if it is a semiannual test, within a week of the six months. We try to be prompt.

Mr. WASON. And you test those animals on that date, irrespective of their breeding condition?

Mr. HALLIDAY. Well, of course, the temperature indicates whether the animal is in a fit condition to test or not. The preinjection temperatures are taken before the injection of the tuberculin, and, if those temperatures are normal, then we think the animal is fit to inject and we go on and take the test.

Mr. WASON. Irrespective of the period of gestation?

Mr. HALLIDAY. Yes, sir; we have never had any bad results in that respect, because that is what the preinjection temperatures are for.

Mr. WASON. Have you ever had any difficulties which you were not able to account for?

Mr. HALLIDAY. I never heard any complaints in regard to it, and I probably would if there had been any, but we never have had any trouble. We have had cows right up to the period of gestation, and just a week ago one of our men reported that there was a calf born during the night, and he went on taking the temperatures the next day, and the temperatures were normal from this cow that had given birth to a calf during the night.

Mr. WASON. Did he make any allowance for what had happened to the temperature?

Mr. HALLIDAY. The temperature was just what was read on the thermometer. Of course, her temperature then was normal, and then the tuberculin was injected, and the next day her temperature was normal.

Mr. WASON. That might be true in your country, but it would not be true in mine.

Mr. HALLIDAY. I agree with you that perhaps one should use a little more care, but, at the same time, I never have known of any bad results.

Mr. ANDERSON. Are there any further questions? If not, we are very much obliged to you, Mr. Halliday.

Mr. HALLIDAY. Thank you.

ENFORCEMENT OF MIGRATORY-BIRD TREATY ACT.

Mr. ANDERSON. The committee will take up item 31, on page 198, for the enforcement of the provisions of the migratory-bird treaty act of July 3, 1918, upon which we will hear Mr. Holland, representing the American Game Protective Association of New York.

STATEMENT OF MR. R. P. HOLLAND, VICE PRESIDENT AMERICAN GAME PROTECTIVE ASSOCIATION, 233 BROADWAY, NEW YORK, N. Y.

Mr. HOLLAND. Mr. Chairman, the association which I represent is the only recognized national organization of sportsmen in the United States devoting their entire energy to conservation. We have members and affiliated clubs in every State in the Union. There are 7,000,000 shooters in the United States to-day, and as representing those men I respectfully petition that you gentlemen allow the Biological Survey every cent possible for the better enforcement of the migratory bird treaty law and the Lacey Act.

I believe that I am personally well qualified to state what it takes to enforce a game law, for I have spent many years actually engaged in that work in the field. For five years I was with the Biological Survey as a district inspector, and later as United States game warden. To-day the survey has 29 game wardens to cover the entire United States. That means that some men must look after three or four or five States, and it is practically an impossibility. They can only go from point to point and trust to luck in apprehending violators of the law.

Mr. MAGEE. When are the violations mostly made; in the flight of the birds?

Mr. HOLLAND. Mostly during the spring of the year; but you can not confine it to any season.

Mr. MAGEE. You mean when they are going north?

Mr. HOLLAND. From the south, north.

Mr. MAGEE. And stopping at different places?

Mr. HOLLAND. That is the principal time, but they violate the law at all times of the year.

Mr. MAGEE. You mean they follow them from place to place?

Mr. HOLLAND. Wherever they are, the sections wherever these birds are.

Mr. MAGEE. As far north as they go?

Mr. HOLLAND. As far north as they go is where they violate the law. Certainly the survey should have at least one warden and several deputies, one salaried warden and several deputies where they work in every State, in order to come anywhere near rigidly enforcing this law.

Too many people are inclined to think that the conservation of game is an unnecessary luxury, but it is not. There is no phase of industrial life but what is directly affected by the game.

There is no section of the country but what is directly affected by the game contained in that section. The railroads, hotels, restaurants, and everything of that nature get the advantage of the money the sportsman spends when he is in pursuit of game. The manufacturers of boots, shoes, clothing, and all the accessories of automobiles come in for their share of it. In certain sections the larger portion of the natives make their living from catering to the sportsman, guiding him, taking care of his dogs, etc.

But the greatest thing is the food value of these birds. In the State of Minnesota their law requires the gunner to report the number of birds killed during the season, and it was very astonishing to even the best-versed men in the country when the commissioner of that State announced in 1919, during the legal open season, that 1,000,000 migratory game birds were killed in that State, and when you consider that these birds will average from $1\frac{1}{2}$ to 2 pounds of good, wholesome meat, it is certainly deserving of your consideration.

Mr. MAGEE. You mean killed in that State illegally?

Mr. HOLLAND. No; killed during the open season. That record is only taken from one State.

Mr. MAGEE. What kind of birds?

Mr. HOLLAND. The largest proportion would be ducks, different varieties of ducks and geese.

Mr. ANDERSON. 1919 was an exceptional year in Minnesota, was it not?

Mr. HOLLAND. Yes; it was an exceptional year in Minnesota, but you must also realize that we did not get the full report of the number that were killed by any means. That is what they did get—1,000,000.

Mr. RUBEY. Is there any limit to the number that can be killed?

Mr. HOLLAND. Twenty-five a day.

Mr. RUBEY. In Minnesota?

Mr. HOLLAND. That is all over the country. I believe Minnesota has a State law cutting it down to 15, but the Federal law is 25.

Mr. RUBEY. Do you remember what it is in Missouri?

Mr. HOLLAND. Twenty-five. This law has already accomplished wonders for the waterfowl. I personally have seen lakes in the State of Nebraska, where, prior to the passage of this law, a duck was never heard of, and those lakes to-day are simply swarming during the breeding season with waterfowl that in a course of a very few years will furnish both sport and food for the people. I have seen lakes up there that actually looked black with so many birds on them, showing that these birds would breed anywhere, if let alone, and certainly when they have nothing to interfere with them it is like it should be.

While some States like Illinois are spending more money to enforce their State laws than Congress appropriates to enforce the law all over the United States, and while New York has appropriated \$1,000,000 a year for conservation, other States have no organization whatever. Other States have the semblance of an organization. For instance, in my home State of Kansas is a game warden, one

salaries to cover the entire State, and the consequence is that they have no respect whatever for their game laws. The State of Texas has two salaried wardens to cover the state of Texas. In such sections the enforcement of a game law was unheard of until the Federal warden went in there, and the respect for the Federal law has done a great deal, and the greatest benefit has been noted in such States.

Mr. RUBEY. Do the National Government officials cooperate with the State officials in the enforcement of the law?

Mr. HOLLAND. They do wherever it is possible. In some sections it is not possible.

You spoke of the State of Missouri. The State of Missouri is very antagonistic to this migratory bird law and to the Federal Government, and I leave this afternoon for Joplin, Mo., to appear before the Federal grand jury in an action brought by the United States against the attorney general of Missouri, who was apprehended shooting ducks in the spring of the year contrary to the Federal law, and encouraging other people to do it.

Mr. RUBEY. He simply went out for the purpose of testing the law?

Mr. HOLLAND. No, sir; he was duck shooting.

Mr. RUBEY. I know he is a duck shooter, but he wanted that law tested?

Mr. HOLLAND. He may have wanted it tested, but he was shooting ducks as a sportsman, and he had no idea how many he had.

Mr. RUBEY. I know the Attorney General very well. He used to be in the Senate, and I served with him in the Senate, and I know that he is opposed to the law and wanted it tested out.

Mr. HOLLAND. He did not have any idea how many ducks he had in his boat, and the charge was that he had 73 ducks at the time.

Mr. RUBEY. That was in the spring of the year?

Mr. HOLLAND. That was in the spring of the year, and an automobile load of ducks left there the night before. How many were in it I do not know, but if we had gotten them it would have been a violation of the State law as well as the Federal law. There is no question about it.

Mr. MAGEE. You do not find any general opposition to the enforcement of the law?

Mr. HOLLAND. In the State of Missouri you find it, but in the other States, no.

I might say that I am also secretary of the International Association of Game, Fish, and Conservation Commissioners of the United States and Canada, which is composed of officials and ex-officials of the different States charged with the enforcement of the law, and I am frank to say that those men are practically unanimous in favor of this law, and they are all strongly in favor of a larger appropriation, with more power to Uncle Sam in helping them do the work they can not do in certain sections, because they are handicapped for one reason or another.

Mr. MAGEE. This is the treaty that Mr. Platt, of New York, who is now with the Federal reserve bank, is very much interested in, is it not?

Mr. HOLLAND. Yes, sir; this treaty was necessary, gentlemen, because the States would not protect their game. I will refer again

to my State of Kansas. We made an appeal to the legislature and said that we wanted to stop the spring shooting. We were killing millions of ducks coming over from the Missouri territory, and they were not fit for food, and some of them had eggs in them, and there was no sense in killing them; and we said that we wanted this thing stopped. They said, "We are not going to stop it unless Oklahoma and Nebraska stop it. We are not going to deprive our sportsmen of that sport unless they do."

I have been working in one State and know that enormous violations were going on in the next State; but I could not go there, because I always had a box full of reports in my regular territory.

The thing is a business proposition, and I hope the time will soon come when the survey will have sufficient funds and be in a position to pay sufficient salaries to hire competent men needed to put on the job. The United States chief game warden, whom I know personally, has an offer of a much higher salary than he is getting, but he is staying on because his heart is in the work.

Mr. MAGEE. What salary does he get?

Mr. HOLLAND. \$3,750. The job of assistant chief United States game warden has gone begging for over a year. Our association has done its best to find a competent man and get him down here to take an examination for that position, but it has been vacant up until 10 days ago when a man took it whom I know personally, took it because he is interested in game conservation.

Mr. RUBEY. You spoke of Missouri. I want to say that we have a good game law in Missouri, and we have a very thorough enforcement of the local game laws of Missouri. We have a game warden in every county, and we have a splendid system of enforcement. The opposition in Missouri is not so much to the enforcement to the game laws, as it is their opposition to the Federal Government coming in and not permitting the State to do it. They claim that the State is the owner of the game within its boundaries, and it ought to have the right to enforce the State game laws. That is the reason for the opposition to the Federal law in Missouri. I do not want it left in the record that the people in Missouri are not in favor of protecting their game, because they are.

Mr. MAGEE. Would the laws of the State of Missouri permit a man to kill 75 ducks in one day?

Mr. RUBEY. No; they would not. I think you will find that he can be prosecuted under the State law of my State.

Mr. HOLLAND. He can be prosecuted. I was born and raised in Atchison, Kans., and I feel that I am almost a Missourian, because I have tramped up and down the Missouri River, and I feel privileged to say something about Missouri. You used to have rigid enforcement over there under Tarleton, but lately it has not been the best.

Mr. RUBEY. Well, I think I will have to take exception to that statement.

Mr. HOLLAND. Well, it is a fact that their laws to-day read that you may kill ducks up until the 1st of May, and we will let it go at that, at the time that the ducks have eggs in them, if they are going to have eggs in them.

Mr. Charles Sheldon, representing the Boone & Crockett Club, and Mr. J. P. Howe, representing the Campfire Club of America, have

condescended to come down here to-day. Their associations represent the highest type of American men, and they are all heartily in favor of this law. They feel that it has done so much good that more funds should be appropriated to enforce it rigidly so the results will benefit every section of the country.

Mr. T. Gilbert Pearson, president of the National Association of Audubon Societies, is perhaps the best-posted man in America to-day on the value of insectivorous birds, as well as the value of game birds, and if you have no further questions to ask me, Mr. Pearson will talk to you.

Mr. WASON. I would like to ask you a question or two. You spoke about the migratory birds from the standpoint of the sportsman, and also from the standpoint of the food that is produced for the American public. Now, in your work of surveying the situation and the enforcement of the law, do you find any opposition from the landowner or farmer on account of the sportsmen going over his land?

Mr. HOLLAND. Once in a while you do; yes, sir; and it is a very just complaint at times. Some of the depredations they do are as much a thorn in the side of the real sportsman as they are in the side of the farmer, although he has not suffered greatly.

Mr. WASON. Are you trying to enforce the regulations in order to overcome that complaint?

Mr. HOLLAND. Our association is, but that does not come under the migratory bird act, because most of those are hunted on marsh land and lakes.

Mr. MAGEE. They hunt woodchucks up in New Hampshire a great deal.

Mr. HOLLAND. The farmer likes to have them killed, too, does he not?

Mr. MAGEE. Ask the gentleman there.

Mr. ANDERSON. Is there anything further, Mr. Holland?

Mr. HOLLAND. No.

SATURDAY, JANUARY 8, 1921.

TUBERCULOSIS AMONG ANIMALS.

Mr. ANDERSON. If you are ready, Mr. Smith, we will proceed.

We will take up again item No. 59, on page 48, that being the item for investigation and eradication of tuberculosis of animals.

Mr. SMITH. I suggest that we hear Mr. Everett C. Brown first, president of the National Live Stock Exchange.

STATEMENT OF MR. EVERETT C. BROWN, CHICAGO, ILL., REPRESENTING THE NATIONAL LIVE STOCK EXCHANGE.

Mr. BROWN. Mr. Chairman and gentlemen of the committee, I have prepared a little statement that I desire to present, and will add a little to it verbally. I was delegated to attend this hearing as a representative of the National Live Stock Exchange, of which organization I have been president during the past two years. For your information I may say that the National Live Stock Exchange is an association of live stock commission merchants in the membership of

local live stock exchanges at all the leading markets of the United States.

As the representatives of shippers of live stock in this country we are greatly interested in the campaign to eradicate tuberculosis. We are in a position to know something about the enormous loss to the live-stock industry which is being caused by this disease, which is now more or less prevalent in all parts of the country. It has been estimated that tuberculosis in cattle and hogs is causing an annual loss of approximately \$40,000,000. According to statistics which we have recently received from the Bureau of Animal Industry of the United States Department of Agriculture the total number of hogs killed under Federal inspection in the United States during the fiscal year ended June 30, 1920, was 38,981,914. Of that number 4,260,720, or 10.9 per cent, were retained for tuberculosis, which means that they showed tubercular lesions at the time of slaughter.

Hogs are for the most part slaughtered young, and the bulk of these retained for tuberculosis were passed for food because the disease had not yet advanced to a stage that would require their condemnation. In nearly all of these retained hogs the heads are condemned.

These statistics show that there were a total of 37,492 cattle and 65,609 hogs wholly condemned as inedible during the past fiscal year. This means that 3,000 carloads of cattle and hogs were consigned to the rendering tanks for grease and fertilizer during the past year, a virtual waste of approximately 20,000 carloads of feed that went into these animals. In nearly all cases the disease of tuberculosis is not discovered until the cattle and hogs are slaughtered under Federal inspection after they are paid for by the packers. The packers, however, do not stand this loss. They know the average percentage of losses caused by tuberculosis, and when they buy they assume that a certain number will be condemned and prices are made accordingly.

Mr. ANDERSON. Well, that can not be true in all cases, can it, because the percentage of tubercular hogs is much larger in some sections than it is in others, with the result that in some sections of the country the small packers at least do bear some part of this loss.

Mr. BROWN. Well, Mr. Chairman, we have had that in several of our annual meetings, and I think I can distinctly remember two different annual meetings where Mr. Wilson, of Wilson & Co., the large packers, frankly stated to our convention that they estimated in their overhead at least 10 per cent on every car.

Mr. ANDERSON. I think that is true as to the large packers who slaughter over a considerable territory.

Mr. BROWN. Yes.

Mr. ANDERSON. But, as to some of the small packers whose supply comes within a limited area, particularly where that area is an area of high percentage of tuberculosis, they are obliged to bear some portion of the waste or loss incident to condemnations.

Mr. BROWN. I think that is partially true, Mr. Chairman. I know that in certain places in northwestern Iowa and Minnesota, where the smaller packers have plants, that they have found cases where tuberculosis showed in perhaps 40 or 50 per cent of the hogs slaughtered; and they are bound to figure that into their overhead as far as they could go, but they could not go far enough.

Mr. ANDERSON. Exactly.

Mr. BROWN. Yes, sir.

Mr. ANDERSON. Very well. You may proceed.

Mr. BROWN. While it is known that tuberculosis is found in every State of the Union, the condemnations are much higher at some markets than at others. It stands to reason that any market where the percentage of condemnations runs high is decidedly to the disadvantage of the shippers to that market. The commission merchants at these markets are fully awake to the seriousness of this situation, and all of the principal exchanges in the Middle West have recently made appropriations for the purpose of aiding in every way possible the campaign now well started throughout the country, which we hope will not only keep this disease under control but will actually cause it to be stamped out during the next few years.

The Chicago Live Stock Exchange was represented at the first hearing on this subject three years ago, when Congress made the first appropriation of \$500,000. I doubt if any legislation has been enacted during recent years that is proving as good an investment as the appropriations which are being made for the purpose of reducing the prevalence of tuberculosis. There is no longer any question about the best methods to employ in combating this scourge. The great need is for more men engaged in the tuberculin testing of breeding and dairy herds of cattle. We have gone far enough in this campaign to know that the time required to stamp out tuberculosis depends almost entirely upon the appropriations made available. We believe that this Congress should appropriate not less than \$3,000,000 for cooperative work with the various States. It will be the best kind of an investment from an economical standpoint, and if the campaign is successfully waged, it will undoubtedly reduce to a large extent the prevalence of tuberculosis in the human family.

In our contact with the shippers of live stock from all parts of the country, we can safely say that no undertaking of recent years is more universally commended by the public at large than this campaign to eradicate tuberculosis.

I also wish to say regarding the appropriation which we recommend, of \$3,000,000, we already understand that the different States, in taking up their part of this eradication work—that in all probability the States will appropriate over \$4,000,000. Working on the basis that the Government has been working, whereby the State stands one-third of the condemnation loss, the Government one-third, and the owner one-third, plus what he saves on salvage, we believe the Government can well afford, in view of the tremendous losses that are sustained by reason of this disease, which has been approximated by Government authorities at \$40,000,000 per year, that it is something constructive if we are working along lines of eradicating this disease.

It is also something in my opinion that every branch of the livestock industry is concurrent on. The producer, the packer, the commission man, and right down to the consumer—everybody believes that it is one of the finest things that the Congress of the United States can do, to make appropriations which will help eradicate this disease.

As I understand from the authorities—and I think Mr. Smith will bring that out later—since three years ago which was the high

mark on condemnations for tuberculosis, there has been a reduction in the principal markets of the United States, as shown by the killings, of approximately 20 per cent. Now, we have this disease on the run, and we know it from experiments and the workings out of the appropriations made not only by Congress but by the States, the work that has been done through our governmental channels, as well as the commercial channels, like our Chicago Live Stock Exchange, where we established a sanitary board five years ago. We figured it out as a commercial proposition that if Congress and the States had not done anything that it was the salvation of the livestock industry to start some work that would eradicate tuberculosis. It now is showing practical results, and we believe it would be almost criminal if the Congress of the United States and the States did not meet the situation by appropriating sufficient sums of money to carry this work along.

I think that is all I have to offer, Mr. Chairman, unless you desire to ask me some questions.

Mr. ANDERSON. Are there any questions? If there are not any, we are very much obliged to you, Mr. Brown.

STATEMENT OF MR. H. R. SMITH, REPRESENTING THE NATIONAL LIVE STOCK EXCHANGE.

Mr. SMITH. Mr. Brown has given you something of the general situation, Mr. Chairman, as he represents the National Live Stock Exchange. My work as live stock commissioner has been confined to the Chicago Live Stock Exchange, which takes in quite a number of the Middle West States, and we will hear later from some men who represent the more local districts—the States—on the work that is in progress in those localities, and what they hope to do in the future.

I will say that while I was coming here on the train I jotted down certain things, because I think it takes less time to present what you have to say by having a memorandum of the subject to be covered instead of rambling along indiscriminately.

While tuberculosis is causing a loss to the country far in excess of any other disease, it can be reduced to a minimum in a comparatively short period of years if we use proper methods and work aggressively. Just as in fighting a fire, a few licks here and there will not give results. This has been demonstrated by past experience. A number of States have been working on tuberculosis locally for a number of years, but the losses continued to increase throughout the Nation as a whole. The records of the United States Bureau of Animal Industry show a steady increase in the prevalence of tuberculosis among hogs, from 2 per cent of the total number killed under Federal inspection in the United States during 1908 to 11 per cent during 1920.

Mr. MAGEE. That is an increase in tuberculosis in hogs?

Mr. SMITH. That is the increase in tuberculosis in the hogs throughout the United States as a whole. I may say that represents about 60 per cent of the total number of hogs killed in the country; that is, 60 per cent of those killed are under Federal inspection. I want to say, further, that this represents those that actually show lesions when they are killed. We know that a great many hogs are killed

before the lesions are observable, and the disease is in the incipient stage, and it is safe to say that more than 11 per cent of the hogs of the United States to-day are affected with tuberculosis.

To stamp out this scourge there must be concerted work wherever the disease exists, and that means in every State in the Union.

Mr. ANDERSON. May I ask you a question there?

Mr. SMITH. Yes, sir.

Mr. ANDERSON. I understood that the hog crop practically turns over every year. Now, this contamination of a hog herd gets there, I suppose, from the cattle or from contact with other hogs—which is it?

Mr. SMITH. Mostly from the cattle.

Mr. ANDERSON. Mostly from the cattle?

Mr. SMITH. Yes; because most of the hogs are killed young, before the germs are given off. The lesions are inside, and it is only the older sows that develop these advanced cases, and they may give off germs, but it is safe to assume that 90 or 95 per cent of the tuberculosis in hogs comes from cattle.

Mr. ANDERSON. In what way?

Mr. SMITH. From milk, or the droppings, or the dead carcasses.

We make a practice in Chicago of tracing back a number of diseased shipments, and it quite often happens that when we trace back a bad lot of hogs and correspond with the owner, we find that he has made a practice of feeding dead cattle carcasses to those hogs. An instance like that came to my attention a short time ago. One of our largest feeders in Illinois wrote me that he felt sure he could explain that situation. He said that one of his steers began to decline in flesh and died, and he just let the hogs eat the carcass, and there developed a very bad situation in that bunch of hogs.

This appropriation made by Congress three years ago came none too soon. It was legislation of the greatest possible importance to the country, wisely formulated, and it has already given encouraging results. It was so worded that no State can receive any portion of the Federal appropriation without providing an equal sum through legislative action. The present appropriation of \$1,500,000 has been more than duplicated by the 45 States now cooperating. The total appropriation of the States is \$2,300,000.

A central administrative organization has been established here in Washington which is cooperating on equal and harmonious terms with all of these States. To date 72,000 herds of breeding and dairy cattle have been placed under the supervision of Federal and State authorities, a large number of reactors have been slaughtered, the premises have been disinfected, and many of these herds are now free from this infection. Four years ago 2.6 per cent of all the cattle killed under Federal inspection in the United States showed lesions of tuberculosis on post mortem. During the fiscal year 1920 2.1 per cent of the total kill of cattle in the United States were retained for tuberculosis—a reduction of 20 per cent. When tuberculosis is largely eliminated from cattle the disease automatically disappears among hogs, so it is safe to say that 95 per cent of the tuberculosis among hogs comes from cattle through infected milk, droppings, and from eating the carcasses of cattle which have died of this disease.

My work as live-stock commissioner of the Chicago Live Stock Exchange has brought me in contact with many live-stock breeders and feeders throughout the Middle West. There is a pronounced sentiment in favor of extending this work. Practically every State has a long waiting list of applicants for accredited herd testing. The reimbursement is not large—in fact, but a small part of the total loss on valuable pure-bred cattle slaughtered. But these breeders are willing to stand a reasonable share of this loss in order to have a clean herd and wholesome milk for their families.

The great need at this time is more man power in every State. We have in Illinois seven veterinarians employed by the Federal Government and seven by the State engaged in this work, which means but one man for a group of seven counties. We should have one man for each county, and if this could be made possible tuberculosis would be stamped out of more than half the counties during the next four years.

I have recently written to all State officials to learn the probable amounts that will be appropriated for tuberculosis eradication during the ensuing year. The total for 29 States heard from is \$2,700,000. The amount from all States will in all probability exceed \$3,500,000. The National Government, through this legislation, proposes to cooperate with the States on a fifty-fifty basis. It would follow that the work will be curtailed unless Congress appropriates at least \$3,000,000 at this session. A national appropriation of \$3,000,000 annually during the next four years for tuberculosis eradication would, I firmly believe, put our annual loss caused by this disease below \$5,000,000, while now it is between \$30,000,000 and \$40,000,000 annually.

Mr. ANDERSON. Now, let us see. You expect \$3,000,000 from the Federal Government and \$4,000,000 from the States. That is \$7,000,000. Do you think it is possible to get veterinarians enough to spend that money profitably and economically, without any waste?

Mr. SMITH. How is that?

Mr. ANDERSON. Do you think it is possible to get trained men to spend \$7,000,000 on this work?

Mr. SMITH. Yes, sir; I certainly do. There are a great many private practitioners in different parts of the country that are well qualified to take up this work.

Mr. MAGEE. Is there any supplemental allowance here?

Mr. ANDERSON. No. They ask for \$500,000 additional.

Mr. MAGEE. You only appear to have asked for \$1,978,800——

Mr. SMITH. We feel that it should be more.

Mr. MAGEE. Well, there is no supplemental estimate here.

Mr. SMITH. Well, this, of course, represents our own ideas on this.

Mr. MAGEE. We can not act without estimates on it.

Mr. SMITH. I have no doubt that possibly that estimate was made before we knew just what the States would do. We now have data to show that the probabilities are that the States will appropriate three and a half or four million dollars, according to the sentiments of the people throughout the country.

Mr. ANDERSON. This proposition is in the very same shape as a number of others which were taken up on the same basis. We are finding a great many instances that work has been begun upon a fifty-

fifty basis, the Federal Government taking the lead in it. As additional States came in, it is very difficult, if not impossible, for the Federal appropriations to keep up on a fifty-fifty basis with those of the States. That seems to be the situation here.

Mr. SMITH. In regard to your other question, Mr. Anderson, on the veterinarians, I may say that the automobile industry is cutting down the work of private practitioners throughout the country a great deal. There is not nearly so much need of regular practice with horses, etc. I think that we could get the number of veterinarians required, without any doubt.

We should, for the reasons I have stated, look upon this as an investment rather than an expenditure. We should look upon it as a conservator of human lives. Gentlemen, one-eighth of the price of one modern battleship invested in this enterprise will pay for itself many times over. It will close up a dangerous leak in our live-stock business; it will lessen the cost of producing meat and milk; and it will unquestionably reduce, to a large extent, the death rate from human tuberculosis, which disease, according to public health statistics, is more prevalent throughout the country than any other. We believe in efficiency and economy in the conduct of all business, whether public or private. A liberal appropriation to expand the work of stamping out tuberculosis is in line with such a policy. We know that your committee will give this problem the consideration it merits, and I submit it.

Now, if there are any further questions, Mr. Chairman, I will be glad to have you bring them up, and I will answer them if I can.

Mr. ANDERSON. You referred to an inquiry that you sent out to the different States asking for the estimated appropriations for this year.

Mr. SMITH. Yes, sir.

Mr. ANDERSON. Did you include in your statement a list of the probable appropriations for the States?

Mr. SMITH. I have a list of the estimates of these 29 States. The bureau, I find this morning, has a complete list of the estimates of all States, and it shows a total of something over \$4,000,000.

There is one other statement I would like to make, and that is this: The county farm bureaus in several States are taking an active interest in this work, and they are cooperating by raising money to supplement the money appropriated by the Government and the States, to make it possible to have a veterinarian in their own county, who gives his time to their own herds. It just shows what the sentiment is throughout the country in favor of this kind of work. I think it offers great possibilities. They all want the disease stamped out.

There is one little incident that I want to mention here. In one of our Illinois counties a few days ago there was a case that is very interesting to me. There were 12 children in a family of a certain farmer, and 11 of those children were breast fed. One was raised on cow's milk. That particular child became sickly, and the physician was called and diagnosed the case as tuberculosis. He suggested having the cows tested. They did so, and every cow reacted to the test, and the cow which supplied the milk to this child, that later died, was rotten with tuberculosis.

That one thing has popularized the work very much in that country, and they all want testing done. I know of any number of cases of that kind, that have come under my observation.

Mr. ANDERSON. I think, Mr. Smith, the committee is impressed with the importance of the work all right. Of course, all of these appropriations are relative, and they have a certain relation to the general policy which we assume Congress will adopt with respect to appropriations generally. The committee, of course, has to keep in mind that relatively all the way through.

Have you any further witnesses whom you wish to call?

Mr. SMITH. Yes. Mr. Thompson, the editor of the Iowa Homesteader.

Mr. RUBEY. I have a telegram addressed to myself which I would like to read:

JEFFERSON CITY, Mo., January 7, 1921.

Mr. Bellows will be unable to attend hearings on tuberculosis appropriations as was expected. The board of agriculture unanimously requests that Congress appropriate sufficient money for this great work to equal the amounts being appropriated by the several States.

A. T. NELSON, *President*.

JEWEL MAYNES, *Secretary*.

These gentlemen are, respectively, the president and secretary of the State board of agriculture of my State.

Mr. ANDERSON. We will now hear Mr. Thompson.

STATEMENT OF MR. JOHN THOMPSON, EDITOR IN CHIEF OF PIERCE'S FARM WEEKLIES, DES MOINES, IOWA.

Mr. THOMPSON. I want to say that I believe there has never been any more important constructive legislation passed than when this accredited-herd plan became a law three years ago. Up until then we had been trying to do something in the way of eradicating tuberculosis, but practically, as has already been said, little was accomplished. In fact, the farmers were not for it in those days. It was more or less of a forced proposition, because they could not see that there was any possibility of ridding the live-stock industry of the disease.

Now, since the accredited-herd plan has gone into effect, it has become clear to the farmers that it is only a matter of time when tuberculosis will be eradicated from our cattle, and that means also to our hogs and to a large extent also from our chickens, and it means the eradication of human tuberculosis.

This work has been done so efficiently, and the breeders are so well satisfied with this accredited-herd plan, that there is a tremendous demand all over the country for this testing to be done.

In Iowa alone we have 850 applications on file that can not be attended to because both the State and Federal—well, not the Federal, but our State appropriation has given out. For the last two years we have appropriated \$100,000 a year in Iowa. This year we expect to get \$700,000, but we shall need every cent of it, and what we can get from the Federal Government in addition, and then we shall not be able to take care of all those who want the work done.

If we could assure the farmers to-morrow that we would have \$700,000 available from the State and a half million from the Gov-

ernment, I am satisfied that we would get a thousand applications inside of a month.

There is just that interest among the farmers in Iowa in this work, and they believe in it to that extent.

Speaking for the agricultural press, I think I am correct in saying that there is not a farm paper that is not for this accredited herd plan, heart and soul. If there are any, I do not know which it is, because we feel that it will mean the cleaning up of our cattle, and it will mean a saving of this enormous waste of cattle and hogs that goes on every year. As has been mentioned here, \$50,000,000 a year has been wasted from tuberculous animals, and it is a tremendous waste. If we could have \$3,000,000 from the Federal Government this year, continuing possibly with that amount for the next 10 years, there is not any doubt that we would practically be rid of tuberculosis.

It would be the most advanced step that any country in the world has ever taken. The European countries are full of tuberculosis. They have never carried on any concerted work such as we are carrying on in this country now. That will mean a great deal, not only directly to the farmers but also to the live-stock industry as a whole in the effect on foreign countries. "The United States has no tuberculosis." If we could advertise that, think what it would mean to our live-stock breeders. Think what it would mean in the demand for American live stock down in Argentina and Australia and those countries that are beginning to buy live stock from us to-day. It would have a wonderful effect in that way, but that is only incidental. The great thing would be the real help here in this country in saving this enormous waste every year, especially in view of the fact that live-stock prices are coming down, and it is harder for the farmer to make the farm profitable, or will be for many years to come, than it has been in the past.

Mr. ANDERSON. If there are not any questions, we are very much obliged to you if you have finished your statement.

STATEMENT OF MR. F. T. PRICE, SYRACUSE, N. Y., REPRESENTING THE DEPARTMENT OF AGRICULTURE OF THE STATE OF NEW YORK AND THE HOLSTEIN-FRIESIAN ASSOCIATION OF AMERICA.

Mr. PRICE. My name is F. T. Price, and I have been asked to represent the Department of Agriculture of the State of New York and the Holstein-Friesian Association of America.

The work that is being done by the Federal Government is undoubtedly very important, particularly from the standpoint of the pure-bred live-stock industry. I would like to speak first upon that phase of it.

The pure-bred industry furnishes the basis for improving the live-stock industry of the country, and with the situation as it is the various breeders are taking up this work under the impetus that was given by the cooperation of the Federal and State Governments, and we are assured in that way that we are getting better live stock. We are getting cattle that are clean, and it has come to mean a whole lot to the live-stock industry generally.

We are coming to realize that in the future the criterion by which people will buy cattle for improving their herds is that they shall be tested by the Federal Government. A Federal certificate is the basis upon which people are buying now.

I think, Mr. Anderson, you will realize that in Minnesota, particularly, where the work has progressed particularly with respect to the Holstein-Friesian industry, to the point where the State has assumed a position of leadership. As a result of that, the breeders of Minnesota are in a position to get better prices for their stock and to command a larger market than they otherwise could.

I have been asked to say just a word about the progress of the work in New York State. Up to January 1 of this year, approximately 65 herds have been fully accredited on the tuberculosis—free accredited list. Approximately 750 herds have passed the first successful test, in the process of becoming accredited, and approximately 1,500 herds, aggregating 59,600 animals, are under State and Federal supervision in the State of New York alone. The State has now on its waiting list 500 applications for tests, and that means that the money must be forthcoming to continue this work that has been started, and this is, of course, very largely undertaken by owners of pure-bred cattle—Holstein-Friesian, Jerseys, Guernseys, and Ayrshires. Those associations are all in accord, in favor of as liberal appropriations by Congress as can be permitted.

Mr. ANDERSON. What has New York State spent on this work?

Mr. PRICE. I was just going to give you that information. Mr. D. W. McLaurey, head of the Bureau of Animal Industry, advises me that New York State spent last year, from July 1, 1919, to July 1, 1920, \$446,000 for indemnities, and approximately \$50,000 for operations. He states that they will use as much or more this year.

Mr. ANDERSON. I do not know whether you can answer this question or not, but the proportion of the cost which goes to administration and the proportion which goes to indemnities in New York is apparently over and above the proportion that has been spent under Federal supervision. Do you know why that is?

Mr. PRICE. No, sir.

Mr. ANDERSON. It runs about 50-50 under the Federal appropriation, or it has heretofore. Now, in New York it is about 8 to 1.

Mr. PRICE. I think the State has five Federal and five State men at work, and our waiting list has grown to be of considerable size, due to the fact that we have not sufficient men in the field at work. The States that are leading in this work appear from the Government reports to be such dairy States of importance as Wisconsin, Minnesota, and New York; and, I may say, that the pure-bred interests have taken hold of this in such a way that it appears that the future health of the live stock of the country will be safeguarded by a continuation of the work through the pure-bred industry, because the pure-bred industry is the industry that builds up the live stock industry of the country.

I have not any extended remarks to make. I simply wanted to urge, in behalf of these associations that I represent, the continued appropriation.

Mr. ANDERSON. Are there any questions?

Mr. MAGEE. Have you had any trouble in getting veterinarians in your State?

Mr. PRICE. I understand, Mr. Magee, that there has been some trouble, but of late the difficulty seems to have disappeared, on account of the easing up of the labor situation generally.

Mr. ANDERSON. If there are no further questions, we are very much obliged to you, Mr. Price.

STATEMENT OF MR. S. M. SHOEMAKER, ECCLESTON, MD., REPRESENTING THE NATIONAL GUERNSEY ASSOCIATION.

Mr. ANDERSON. Will you just give your name and your position to the reporter?

Mr. SHOEMAKER. S. M. Shoemaker, Eccleston, Md. I do not know that there is anything that I can add to what has been said, but I can indorse everything that Mr. Smith has said in presenting this case.

I want to say that in my association with the farmers of Maryland I have never known them to take anything like the interest in any proposition that they have in this work. They are raising funds themselves so as to add a man—to keep men in the field. That has never occurred before. There is not any question in my mind but that, as far as the pure-bred industry is concerned and the cattle industry generally, and the health of infants, they are all closely wrapped up in this one proposition.

I understand the latest statistics show that 39 per cent of the children under 5 years of age that died with tuberculosis showed unmistakably that it was of the bovine type, so that there can not be any question about its being a very serious problem as far as human welfare is concerned and the health of the country.

As I say, I do not know that I can add anything, but I certainly indorse everything that Mr. Smith has said, and as far as our experience in Maryland goes, I am sure that the herd of every member of the Guernsey Association is either accredited or asking, so that I think it is far and away the most popular thing that I have ever known amongst the farmers.

I thank you.

Mr. ANDERSON. We are very much obliged to you.

STATEMENT OF MR. A. F. WOOD, OF MARYLAND, REPRESENTING THE STATE BOARD OF AGRICULTURE AND THE STATE AGRICULTURAL SOCIETY.

Mr. WOOD. I represent in this particular instance the State Board of Agriculture of Maryland, and, as an executive officer, the State Agricultural Society.

My first experience with this disease was gained in Minnesota from eight years' work there, and anyone who has seen the effect of the eradication work of that State knows the importance of it in the improvement of the herds and also in the bringing of buyers into the State.

That State gets buyers from Maryland, New York, and all this eastern country on account of its reputation for having herds that are free from tuberculosis. Maryland is a dairy State principally, and has a very large number of very fine pure-bred herds of Guernseys, Jerseys, and Holsteins, and I can second what Mr. Shoemaker

has said, that I have never in my experience in something over 30 years, in working in agricultural education and extension work, found a project which has the undivided support of the farmers, as well as the people of the cities, as has this project.

Our people in Maryland are all behind it, and realize that until we can clean the tuberculosis out of our herds that we can not compete with other States in the production of pure-bred stock, and we can not remove the danger, successfully, that exists in any untested cow. You can pasteurize milk, and have laws requiring pasteurization, but we know perfectly well that they are only about 30 per cent effective, and that they are never used at all outside of the large cities.

As Mr. Shoemaker said, nearly 40 per cent of the tuberculosis among young children comes from bovine tuberculosis. So our people in the cities, as well as in the rural districts, are behind this movement, and we would like to see an appropriation which we feel should be made in the interest of promoting the live-stock industry generally and the health of the Nation.

Mr. ANDERSON. If there are no questions, we are very much obliged to you.

STATEMENTS OF MR. W. A. WENTWORTH, DES MOINES, IOWA, REPRESENTING THE IOWA DAIRY COUNCIL AND THE IOWA STATE DAIRY ASSOCIATION; DR. J. A. KIERNAN, BUREAU OF ANIMAL INDUSTRY; MR. A. F. WOOD; MR. JOHN THOMPSON; AND MR. EVERETT C. BROWN.

Mr. WENTWORTH. I am at present in the employ of the Iowa Dairy Council, but to-day am representing the Iowa State Dairy Association, of which I happen to be, at the present time, vice president.

I am also the owner of Jersey cattle in the State of Iowa. Up to three years ago I was actively interested, and solely interested, in the production of pure-bred live stock. We had at that time, I feel, one of the few free, clean herds from tuberculosis in the State and found it very difficult to secure animals to introduce into our herd which would be on an equal basis with the cleanliness of our herd, in so far as this disease was concerned.

I am just going over a little of the situation in Iowa, because I feel that Iowa at this time has taken a very active interest in the work.

As Mr. Thompson has stated, at the present time Iowa has some eight hundred and odd herds which are free from tuberculosis. We have over 800 which are on the waiting list. Interest has grown in Iowa in the last two or three years. There was about a year of the operation of the Federal appropriation before Iowa took any hold or began to cooperate in the work, so that all of this work has been done in these two years.

As Mr. Thompson explained to you, we expect to get in the neighborhood of \$700,000 for State work in Iowa this coming year and the year following. It is going to be necessary to have that in order to meet all of the requests which are coming into the gentlemen in charge of the work in that State.

For two years I was engaged as agricultural county agent in one of the northern districts of Iowa. I was in that county at the time

that this work started. That county perhaps took the lead in making applications for this work, because of the fact that there was as large, if not a larger percentage, of pure-bred breeders. Those men took the lead. However, the men who are breeding grade animals, those are probably the largest percentage of farmers and breeders in Iowa, rapidly followed, and at the time that I left this particular county there was then an equal number of grade breeders and pure-bred breeders who had made application for this work. I understand at the present time in the State there is about 60 per cent of the men whose herds are under supervision who have applied for the work—60 per cent are breeding pure-bred animals, and 40 per cent are breeding grade animals. However, there is a much larger interest coming about on the part of the grade breeders.

I would like to mention briefly, for example, the town of Lake Mills, in Iowa, which is a place of possibly 800 population, one in which it is difficult to secure an adequate milk supply. They have felt the need of this work and have brought all of the cows which are supplying milk for that town together in a cooperative arrangement whereby they have submitted those animals to the work, under the supervision of the State and Federal Governments, as is carried on at the present time.

A similar instance is Strawberry Point, where the population is about 1,400. There are probably other towns of about that size to which we could refer.

I also feel that the work, as it is conducted at the present time, is far more effective in the eradication of tuberculosis than any enforced regulations or laws could accomplish. A noticeable example of that is the city of Cedar Rapids, a city of a population of probably between fifty and sixty thousand inhabitants, in the State of Iowa. About 10 years ago Cedar Rapids passed a law or ordinance requiring all milk which was distributed in Cedar Rapids to either be pastuerized or be from a tuberculosis-free herd.

At that time two or three of the dairymen in that district, producers in that district, carried that ordinance to the Supreme Court of Iowa and there defeated its effect. In other words, there was not public sentiment sufficient to permit of the enforcement of such an ordinance as that. That same dairyman who was active in carrying that matter to the Supreme Court of Iowa has to-day placed his herd under the supervision of the State and Federal governments, and out of 200 men who are producing milk for the city of Cedar Rapids, 50 have already made application. There would have been more than that had it seemed possible for them to secure the work. Of those 50 who have made application only about 15 of them have been able to have the test applied to their herds, due to the situation of finances of the work in the State.

The State of Iowa at the present time is paying a larger amount per head, both on grades and pure breds, in indemnities than the Federal appropriation allows. Consequently we feel that in Iowa, where we are expecting to receive in the neighborhood of \$700,000 in order to keep that work going as it has been, that we should have at least \$300,000 or \$350,000 Federal money. Federal supervision and Federal cooperation is the thing which has made the work successful in the State, and I feel that the interest which is evidenced in

Iowa and their almost voluntary willingness to take on this work, and having two representatives down here to-day to urge this upon your committee in any other way that we can, to keep the funds in an adequate amount, so that the eradication of the disease in Iowa can progress in proportion to the demands—I say “demands” because it is practically a demand in the part of the farmers and the breeders in this State. I know from personal contact with the two gentlemen, the Federal supervisor and the State veterinarian, that it is very difficult for them to apportion the work with the limited number of veterinarians and the limited amount of money that they have out over the State, so that it keeps these various breeders satisfied, and it keeps them from practically coming down to Des Moines and stirring up trouble with them because they have not come down to their farms, when possibly they have had their application in for a period of six months to a year, and some of them longer.

If there are any questions regarding the work in Iowa I shall be glad to answer them.

Mr. ANDERSON. If there are no questions, we are very much obliged to you.

Mr. SMITH. I want to say that I have a telegram from Mr. Moscropp, who was to be here to represent Minnesota, and he tells of his inability to be here, but he says that Minnesota is squarely behind this program, and as a former member of the Minnesota Sanitary Board I may say this, which I presume, Mr. Chairman, you already know, that the State of Minnesota has been the leader in this work. Minnesota has the largest number of accredited herds of any State in the Union, and the sentiment among all the breeders and farmers in Minnesota is strongly in favor of extending this work as rapidly as it can be done.

Mr. MAGEE. What do you mean by “accredited herd”? One that has been passed on? Do you mean it is free from tuberculosis?

Mr. SMITH. An accredited herd is this: It is called tuberculosis-free accredited herd, and certified as such after every individual in the herd passes two successful tests.

Mr. MAGEE. How far apart?

Mr. SMITH. At an interval of one year apart. They must pass two successful annual tests or three successful semiannual tests, and then the herd is certified as free from tuberculosis.

Mr. MAGEE. Then the next grade you call what?

Mr. SMITH. “Once tested,” where they pass one test without showing any disease. They are in process of being accredited. When a man has a tuberculosis-free, accredited herd, he is privileged to ship his cattle to any State in the Union, without any restrictions.

Mr. MAGEE. If the herd has been credited?

Mr. SMITH. Yes; if the herd has been credited.

Mr. MAGEE. And that is shown by the action of the Federal Government?

Mr. SMITH. Yes, sir; action of the Federal Government and the State cooperating. All of this work is done cooperatively.

I wish, Mr. Chairman, that we could have some more questions from your committee. This is such a tremendous subject that we can not cover it all, but if you have a question, we would like very much to have any opportunity to go into it.

Mr. RUBEN. I think the chairman stated the question pretty squarely, and that is that not only on this occasion, but upon others, it is a question with us of money. No questions that we could ask you would help the situation, I am sure. I think the members of this committee are all in sympathy with this work. I do not think there is any doubt about that. It is only a question with us of how much we have to spend along this particular line.

Mr. MAGEE. I would like to ask for information: Take the different herds of cattle in the State, what method does the Government use in making examination of those herds? Do they wait for voluntary applications to be filed by the owners, or what do they do?

Mr. SMITH. Mr. Chairman, I was just asked a question on the policy of the Bureau of Animal Industry, and I ask that Dr. Kiernan, who is with the bureau, who came here to-day, to answer just such questions. I say this is a matter of policy of the bureau, and I am going to ask Dr. Kiernan to answer that question.

Mr. MAGEE. It is only with a view to the benefits to be derived generally, as to what extent the Federal Government is able, through its methods of operations, to reach the dairy cows generally through the State.

Mr. J. A. KIERNAN. When the work started, in 1917, it was divided into three branches: First, eradication of tuberculosis from the pure-bred herds of cattle. That is known as the accredited-herd plan. The next project is the eradication of tuberculosis from circumscribed areas; that is, to go into a county or into a township, or wherever people want it done, and clean up the tuberculosis in the township or the county. Now, we are doing that in some counties in New York State. For instance, in Otsego County and Essex County they are carrying on work like that. It contemplates the total eradication of tuberculosis from all the cattle in those two counties. A few weeks ago at Ithaca, at a meeting up there, a resolution was unanimously adopted providing that every county in New York State should take up this work. We are doing that in most States. We are doing it in Missouri, right around St. Louis County.

Mr. ANDERSON. How many tuberculosis-free counties are there now? Are there any?

Mr. KIERNAN. Yes, sir; there are some. For instance, in Mississippi, Clay County was really one of the first counties that was able to clean up.

In Hoard's Dairyman there was an article entitled "The first free county in the United States"—Barron County, Wis.—where they have carried on a campaign and tested every animal in that county, at a very nominal cost also.

Mr. MAGEE. That was the point I was interested in—just how far-reaching the work is carried on, to what extent.

Mr. KIERNAN. When it first started there were only a few States that had appropriations to go on with the work. That was in 1918. Now it is in operation in 45 States. Besides doing credit herd work, we are doing area work.

Mr. MAGEE. Of course, we all know, I think, that a good many farmers would be a little diffident about pushing forward an application to have their herds tested. Just what efforts does the Federal Government make toward reaching the cattle generally?

Mr. KIERNAN. Well, meetings are held in counties. They are arranged for by the State authorities, and they go around to the farm bureaus and they tell them about this work being carried on. Those counties organize in live-stock associations and agree to take up the work in communities.

Mr. MAGEE. I assume more or less activity on the part of the States?

Mr. KIERNAN. Yes, sir.

Mr. MAGEE. With reference to their milk supplies?

Mr. KIERNAN. Yes, sir; and the cities also. When this work started, it started purely on an economic basis. The Federal Government said, "We are not going to have anything to do with the public-health side of the question." But in practically every State that phase of the question is becoming more prominent all the time. Cities and towns and boards of health demand that you take this work up from a public-health standpoint. It is not a local proposition. It is in operation in Maine, in the State of Oregon, the State of Florida, and the State of Texas—in every State that interest seems to be just as intense. There is absolutely no State law, city law, or Federal law trying to coerce people into it. We have steered clear of any kind of coercion or coercive measures, putting it on a voluntary basis, and we believe that is one reason why the farmers are taking to it so well.

Mr. RUBEX. Just on that question—how do you propose, when you go into a county, to get the people of that county to agree to this proposition?

Mr. KIERNAN. Well, the solution of it is brought about by the fact that if one or two herds—we start early, testing a few herds in there, and we form the nucleus for that sentiment in that county. When a man gets his herd cleaned up, his neighbor wants his herd cleaned up. Two or three neighbors get it around here, and their neighbors are not tested; and they demand that the neighbors' herds come under the test.

Mr. RUBEX. How do you get at the sentiment of the county? How do you find out, for instance, that they are willing to submit to a test? You have to get their consent before you can go into it.

Mr. KIERNAN. Well, at first, when the work started, all the pure-bred cattle associations of the United States entered into an agreement to start this work through their journals and the agricultural papers and the daily press; they recommended it to the people.

Mr. RUBEX. But I am trying to get down to the practical proposition. Suppose you want to go into a county. Now, then, you have got to have some method by which you can get the consent of the people in that county, if you go in and clean up that county.

Mr. KIERNAN. Yes, sir. Well, a great many of the States permit the county commissioners to cooperate with the State and Federal Governments in the practical eradication of the disease.

Mr. RUBEX. Well, you find John Smith out there who has a herd of cattle, and he don't want to have anything to do with this; what do you do with him?

Mr. KIERNAN. I will tell you how it operates practically. We are working over in Maryland. The people subscribed \$2,000 to carry on the work and the State was cooperating. They got into a community where practically everybody wanted their herds tested, and there was one man in there that had a pretty large dairy herd, and

he said, "No; I don't believe in the tuberculin test. I am not going to have my herd tested." The inspectors kept away from him. They did not annoy that man, but when the herds all around about him were tested, that man can not go to church, he can not go to the store, and he can not get on the train, but what his neighbor will say. "Why don't you have your herd tested?"

Mr. RUBEY. It is just public sentiment, then?

Mr. KIERNAN. Yes, sir.

Mr. BROWN. What is the effect on the price of the herds that were tested, as compared with his?

Mr. KIERNAN. We are told by the owners of credited herds that they get some 25 to 50 per cent more for these cattle that are known to be free from tuberculosis than cattle the health of which they know nothing about.

Mr. BROWN. Hasn't that got some effect on the citizen who declined at first to have his herd tested?

Mr. KIERNAN. It certainly has.

Mr. MAGEE. Along the line suggested by Mr. Rubey, you do not use anything or have no authority to use anything except persuasion?

Mr. KIERNAN. That is all, and we do not want anything else.

Mr. MAGEE. If anybody objects you let him alone until he gets ready?

Mr. KIERNAN. Yes, sir.

Mr. SMITH. In many sections of the country the county agents have been rather active. In four counties in Illinois they have taken a very active part, and the farmers pretty nearly have agreed to have their herds tested—purely a voluntary agreement.

Mr. WENTWORTH. I tried to bring that out in that one instance of Cedar Rapids, Iowa, where 10 years ago the ordinance requiring tuberculosis free milk was taken into the courts by the farmers in that district, whereas to-day the fellow who was the instigator and leader of that action has submitted his herd voluntarily to this agreement.

Mr. MAGEE. Did the court pass on the ordinance?

Mr. WENTWORTH. I am not familiar with the legal term, but the court made it ineffective. They went to the Supreme Court of Iowa with that matter.

Mr. THOMPSON. In Iowa, as I stated, we have 850 men on the waiting list, and they just came in. We did not have to go out and tell them that it is good. There are 850 waiting without being asked to do anything, and they come in all the time. There will be a thousand more come in when our next appropriation comes in. We do not need any propaganda.

Mr. WOOD. I think there is one aspect of the Government's relation to this that ought not be overlooked. We have been doing this testing in the States independently for some years before the Government came in. The trouble was that we could not control the situation. The testing was done by veterinarians who were not competent sometimes. We had no way of weeding out locally. The farmers very generally lost confidence in the work. Since the Government came in they have not only tested herds and certified herds, but they have certified the veterinarians, and it has given us a means of weeding out the incompetent men or the men who do plugging, if

you know what that is. The fact that the Government has come and taken a careful stand has had more to do with the rapid development and the interest obtained in the work than any other single factor.

Mr. BROWN. May I ask you a question?

Mr. ANDERSON. Surely.

Mr. BROWN. One of the members of the committee has pointed out that the request submitted to you was for a million some nine hundred and odd thousand dollars.

Mr. ANDERSON. Yes.

Mr. BROWN. If I recollect——

Mr. MAGEE. You understand, under the law written estimates are submitted by the Secretary?

Mr. BROWN. Yes, sir. If I recollect, on previous appropriations—I think I appeared before the conference committee at the time Chairman Lever was handling this matter, and if I remember correctly there was an estimate at that time which the committee exceeded.

Mr. ANDERSON. Yes; that has been done.

Mr. BROWN. I just wanted to ask if this committee, in their findings, in any investigations, found that the State appropriations were so large that in their good judgment it was necessary to increase the appropriation over that recommended, if it was within your province to do it?

Mr. ANDERSON. It is entirely so. The next question would be whether we would get it through the House of Representatives or not. But it is not the practice, as a rule, to exceed the estimates of the departments.

Mr. MAGEE. I do not assume that the committee would ordinarily make a larger appropriation for a department than the Secretary of that department, under the law, had requested.

Mr. SMITH. That was done three years ago. Congress appropriated twice what the Secretary estimated.

Mr. MAGEE. I am not talking about the power of Congress to act in the premises. I am talking about the proposition. I am frank to say that as far as I am concerned, I do not think that I would feel justified in voting for a larger appropriation than the department which would spend the money had, under the law, specifically requested the committee to make, through the estimate submitted. I only speak for myself.

Mr. WASON. I have in my office a telegram from the secretary of the Guernsey Breeders' Association of this country, which urges me to support this proposition. He is a neighbor of mine and a constituent, and I know him very well. I am a member of the association myself, being a breeder; also, from the commissioner of agriculture, who writes me a personal letter, hoping that I will do as much as a Member of Congress can for this proposition, as is consistent with the financial condition of our Government.

Mr. ANDERSON. Is there anything further?

Mr. SMITH. I do not think there is anything further, Mr. Chairman.

Mr. ANDERSON. If not, the committee will hear Congressman Upshaw on the warehouse item.

SATURDAY, JANUARY 8, 1921.

TUBERCULOSIS AMONG ANIMALS.

STATEMENT OF MR. A. M. LOOMIS, WASHINGTON, D. C., REPRESENTING THE NATIONAL GRANGE AND THE NATIONAL DAIRY UNION.

Mr. LOOMIS. I am secretary of the Washington office of the National Grange, and also secretary of the National Dairy Union.

We received at our office to-day both a telegram and a letter from Commissioner of Agriculture Hogue, of New York, asking us to appear here to-day in the interest of the item for the eradication of tuberculosis. I am from New York, and am personally acquainted with Mr. Hogue and the work of the Department of Agriculture of New York State, as I was connected with the New York State Food Commission for two years. Both on behalf of Prof. T. C. Atkeson, Washington representative of the Grange, and on my own behalf I want to go on record as being in hearty accord with the appearances of the other gentlemen here to-day for the largest appropriation possible for the eradication of this bovine tuberculosis—as large as you gentlemen can see your way clear to allow. It is one of the most important things for the safeguarding of the dairy interests of this Nation.

Mr. ANDERSON. If there are no questions, we are very much obliged to you.

JANUARY 12, 1921.

BOVINE TUBERCULOSIS ERADICATION.

STATEMENT OF REPRESENTATIVE McARTHUR, OF OREGON.

Mr. McARTHUR. Bovine tuberculosis is not only a private question which is of great concern to the cattle owners of the country, but it is likewise a question in which the public has a decided interest. The question of immediate financial losses to owners whose animals may react is one that causes many a breeder to hesitate before deciding to have his herd tested, but where the State and Federal Government agree to cooperate in sharing the losses most progressive breeders are willing to have the test applied. The interest of the public lies in having a clean, wholesome supply of meat and dairy products, and it is sufficiently important to warrant expenditures from the public fund where the breeder shows a willingness to cooperate. Great strides have been made in tuberculosis eradication, and Accredited Herd List No. 3, recently issued by the Department of Agriculture shows a splendid record of accomplishment. This list shows that 4,699 herds of cattle containing more than 125,000 animals have qualified for the Accredited Herd List by passing two annual or three semiannual tests without a reactor or a suspect, while 16,599 herds containing more than 200,000 animals have passed one test with a view of being accredited. In many sections of the country entire areas and even counties have been pronounced as

tuberculosis free by State and Federal authorities working together for a common purpose.

The various breed associations are in hearty accord with the plans of the Department of Agriculture in respect to tuberculosis eradication, and, as one of the board of directors of the American Jersey Cattle Club, I have been requested to recommend to your committee the favorable consideration of the item in your bill for \$1,978,800 for this very important work. I may add that I am the owner of an accredited herd of Jerseys in Oregon, and that the advantages of having a clean bill of health for one's herd are so numerous and weighty that I recommend the tuberculosis test to every breeder in the country in the hope that the "white plague" among cattle will eventually disappear in the United States, and that consumers of meat and dairy products will be assured of a wholesome supply of these all-important foodstuffs.

JANUARY 12, 1921.

FIRE PROTECTION IN NATIONAL FORESTS.

STATEMENT OF REPRESENTATIVE McARTHUR, OF OREGON.

Mr. McARTHUR. Mr. Chairman, the people of the State of Oregon are very much interested in the item of \$400,000 for fire protection in our national forests for the reason that a very large area of that State is included in these forests.

The far Western States contain a large percentage of the timber wealth of our country, and those who are interested in properly conserving this timber and in an intelligent and constructive policy of forestry are organized with what is known as the Western Forestry and Conservation Association. This organization embodies the States of California, Oregon, Washington, Idaho, and Montana. At its last annual meeting, held in Spokane, Wash., on December 6 and 7, 1920, the following resolutions were adopted:

RESOLUTIONS OF WESTERN FORESTRY AND CONSERVATION ASSOCIATION.

The Western Forestry and Conservation Association, in annual meeting assembled, with the States of California, Oregon, Washington, Idaho, and Montana, being represented by Federal and State official as well as private owners of timberland, hereby adopt the following resolutions:

1. *State activities.*—We urge the five Pacific Coast States, which contain 57 per cent of the Nation's timber supply, to enact such laws and make such appropriations to provide for their enforcement as will safeguard timber crops, encourage forest growing on such lands, the chief value of which lies in growing forests, and thereby help to assure permanence of our dominant industry. It is also urged that steps be taken by our various States to enter the field of forest growing by acquisition of forest lands to be held and managed as State forests. This with a view to ultimate profit for the States and as an object lesson for private owners of timber tracts.

2. *Federal Weather Bureau.*—The United States Weather Bureau each year becomes of greater assistance in forest protection effort. In order to perfect its work of forecasting dangerous conditions further experimental work is required, and it is urged upon Congress that the small appropriation needed for this work be immediately provided.

3. *Experiment stations.*—The Federal Government should continue and extend its experimental work looking to better utilization and handling of forest

products. Field experiment stations should also be maintained throughout the West as a means for studying fire, grazing, reforestation, and other problems.

4. *Aeroplane patrol*.—Aeroplane patrols have been operated in California and Oregon the past two seasons. Experience has shown that aeroplanes can be used to great advantage in detecting and locating fires and that their use assures a decided advance in protection methods. We commend the progressiveness of the War Department in allowing the use of airplanes for this important work and urge extension of patrol to the forests of the entire Pacific coast in cooperation with protection agencies. We also urge upon the War Department need for furnishing the air service with type of plane which will make patrol more safe and efficient. The western department of the United States Army has spared no pains to make air patrol of forests a success, and we especially commend their excellent cooperation.

5. *Wireless telephones*.—The work being done by the Forest Service, other departments of the Government, and private enterprise in perfecting the use of the wireless telephone, with a view to its becoming the factor in forest-protection effort, is to be commended. The development of such service to a point where it can be cheaply and efficiently used will mean the saving in the Pacific Coast States alone of thousands of dollars annually.

6. *Tribute to Maj. Arnold*.—On behalf of all western forest interests we desire particularly to voice appreciation of the great service given to forest protection by Maj. H. H. Arnold, of the air service, through his untiring effort to perfect air patrol from the inception of this project to his long trip to help us at this meeting.

7. *Care with fire in logging operations*.—It is urged that greater effort be made to standardize equipment and methods of preventing fires in logging camps. Protection agencies may well give particular attention to this phase of their work, which is each year becoming of greater importance.

8. *United States Forest Service*.—We again commend the Federal Forest Service for the excellent spirit of cooperation which it has always shown toward matters affecting the lumber industry and forest protection in particular. With its organization of trained men it has constantly been in the forefront in suggesting and putting into effect improvements which have been of inestimable value to the industry. We urge upon Congress the need for providing necessary funds for expansion of the work of this service, which has a field of usefulness, extending far beyond the boundaries of the national forests, and we also desire to point out the importance of providing adequate compensation for public officials engaged in forest work.

9. *Troops for forest protection*.—We again urge upon Congress and the War Department the need for establishment of summer field posts throughout the timbered portions of the Northwest and the training of troops along fire-protection lines in order that they may be used as an auxiliary fire-fighting force. We further believe that such training would be of inestimable value to both officers and men as preparation for actual warfare.

10. *Survey of forest resources*.—We again urge and recommend to forest industry generally that it give similar indorsement to a provision by Congress for a survey or census of the forest resources of the country which will determine the quantities of timber available for industrial uses, the current consumption of forest products, the probable regional requirements, the production of forests by growth to meet these requirements, and such other matters the knowledge of which is necessary in order that a national forest policy may be more intelligently carried forward.

11. *Insect control*.—We urge State and Federal appropriations to enable the State experiments stations of Washington, Oregon, California, Idaho, and Montana to carry on investigations of methods of insect control in order that heavy loss to the forests of these States through insect depredations may be avoided.

12. *Fuel oil*.—The past 10 years' use of oil-burning engines in forested areas has been urged as a conservation measure. Present shortage of fuel oil threatens to nullify the progress made in the direction of more general use of such oil-burning equipment. We therefore urge the Forest Service and other Government bureaus to use every possible means looking to putting on the preferred list the fuel oil needs of those operating in forested areas, with a view to sustaining the present standard of forest protection.

13. *National forest policy*.—Believing thoroughly that all interested groups, including producers, consumers, and public agencies, should cooperate in the development of a national forest policy for the mutual good, we indorse the

coalition Federal forestry program advocated by the Forest Service and by the National Lumber Manufacturers' Association, the American Paper & Pulp Association, American Newspaper Publishers' Association, Association of Wood Using Industries, American Forestry Association, National Wholesale Lumber Dealers' Association, and United States Chamber of Commerce, and the majority of State forest departments.

SATURDAY, JANUARY 8, 1921.

PAY OF PRINTERS—WEATHER BUREAU.

**STATEMENT OF MR. M. A. BODENHAMER, PRESIDENT COLUMBIA
TYPOGRAPHICAL UNION, NO. 101, WASHINGTON, D. C.**

Mr. BODENHAMER. Mr. Chairman and members of the committee, I just want to make a few brief remarks in support of the recommendation of the Secretary of Agriculture contained in the Book of Estimates as regards the pay of the printers employed in the Weather Bureau. The Weather Bureau printer to-day is receiving the same pay, \$1,350 a year, that he received in 1913, plus, of course, the bonus of \$240, making a total of \$1,590. The recommendation of the Secretary of Agriculture is along proper lines, to put this class of workmen in the same position that they are in on the outside. It is very meritorious by reason of the fact that they have received no increase except the bonus, although living costs have soared sky-high and wages in this same branch of industry on the outside have increased in some instances more than 100 per cent.

The reasons for the adoption of the recommendation of the Secretary are very many. There is an absolute need for this increase in pay. It has not been taken into consideration, in discussing these matters, but it is an absolute fact that all of these employees, as well as all employees in the classified civil service, have suffered an actual reduction in pay of $2\frac{1}{2}$ per cent in recent months. On August 22 last the civil service retirement law went into effect, and under its provisions $2\frac{1}{2}$ per cent of the pay of every employee in the classified civil service is deducted monthly and goes into the retirement fund, and these employees are just that much worse off financially than before the retirement law went into effect.

Mr. BYRNES. Are you in favor of the repeal of that law?

Mr. BODENHAMER. Absolutely not. I was one of the strongest advocates of that law on the contributory plan on which it was adopted, but I am trying to get at the effect of its adoption at this time. In ordinary times the deduction would not be felt so much, but during such strenuous times we have been going through—

Mr. BYRNES. I only asked the question because I know that a number have complained just as you are now complaining.

Mr. BODENHAMER. Absolutely not. I have always been in favor of the contributory plan of retirement. I do not believe a straight out retirement plan would be practical or fair to the Government.

Mr. ANDERSON. How many printers have you in the Bureau here?

Mr. BODENHAMER. There are eight here.¹

¹Eight printers in Washington, D. C., 27 printers at various field stations throughout United States, as follows: 20 at \$1,800, 1 at \$1,200, and 6 at \$1,080.

Mr. ANDERSON. Are they all of the \$1,350 grade?

Mr. BODENHAMER. All of the \$1,350 grade, with the possible exception of the foreman, the man in charge.

Mr. ANDERSON. What is the character of the work which you do down there?

Mr. BODENHAMER. Well, they keep up all of these meteorological maps and supply all of these cards that you see all over the country, and I think a great deal of other straight printing work is done the same as is done in any job office of the country. They are straight printers in every sense of the word, and do the same class of work. In fact, some of it is more technical than you find in the ordinary job printing shop, more technical than in the Government Printing Office, so much so that it was found necessary to withdraw the office from the jurisdiction of the Public Printer and put it under the administration of the Secretary of Agriculture.

Getting back to the reasons for this increase, the Labor Department's figures show that living costs have increased in this city since 1914 more than 100 per cent up to this time.

We recognize that there has been a declining movement on foot for some time, yet at this time their figures show an increase since 1914 of about 100 per cent. I do not take the position that there has been no change in the cost of living recently. To assume that position would be unfair both to myself and the organization I represent. But I do contend that there has been no change sufficient to in any degree offset the terribly hard times we have suffered in the last year or two.

Mr. BYRNES. Is it your contention that you do not receive as much as printers doing the same class of work in the printing office?

Mr. BODENHAMER. I will show in a minute that there is a tremendous difference to the detriment of these Weather Bureau people.

The press tells us there has been a decrease amounting to 10, 15, and 20 per cent, according to the paper you read, in living costs during the past six months. Granting for the sake of argument that that is so, where do we find ourselves? The Department of Labor, through its Bureau of Labor Statistics, shows that in June of this year living costs reached the peak price, which was 116 per cent above that existing in 1914. Reduce that by the maximum estimate of reductions since June of this year, 20 per cent, and you have remaining an increase in those costs of 96 per cent since 1914, to meet which the Weather Bureau printers have received increases in wages, including the bonus, amounting to an average of 18 per cent minus. It is a fraction less than 18 per cent. It can plainly be seen, therefore, that we are a long way from being back to anything like 1914 conditions.

During that same period the printers down town in the book and job printing offices, in the case of the hand compositor, have received an increase of 108 per cent, and the linotype operators in the book and job offices have received an increase of approximately 100 per cent.

Mr. ANDERSON. What are these figures based on?

Mr. BODENHAMER. They are based on the scales those printers are

71 per cent in that same time. In 1914 in the Government Printing Office the scale of pay was \$24 a week for hand men, \$28.80 for operators, readers, etc., and \$31 for copy editors and desk men. The book and job scale down town at that time was \$19.20 for hand men and \$24 for machine men.

Mr. ANDERSON. What year was this?

Mr. BODENHAMER. 1914. While the newspapers paid \$25.50 for all hands for a 7-hour day. All these rates are for day work.

At this time the Government pays the Weather Bureau printer \$1,590 a year, including the bonus, which is \$30.50 per week. The book and job offices pay \$40 for hand men and \$42 for machine men, and the newspapers pay \$43.68 for all classes. And when I speak of the \$40 and \$42 rates in job offices, I mean that that is the minimum scale, and I venture to say that there are more men receiving above those amounts than there are receiving only the scale. The average will run above \$45 per week rather than under. Not a good job printer nor a first-class machine operator is working for the scale, nor have they for several years. They come very near getting what they ask for.

These are comparisons between conditions down town, both newspaper and book and job, and the Weather Bureau, and the rates show an increase of over 100 per cent in the book and job branch, 71 per cent on the newspapers, and 18 per cent minus in the Weather Bureau since 1914.

And while these printers were receiving this 18 per cent minus increase, other trades were receiving much greater advances, both in the Government and out. For instance, carpenters, who in 1914 received 50 cents an hour, now receive \$1.05, an advance of 110 per cent. Bricklayers, electricians, and similar trades have advanced fully as much. Plumbers now get \$1.25 per hour, as against a pre-war rate of 50 cents. Paper hangers are receiving \$1 an hour and double time for overtime. Motion-picture operators receive from \$45 to \$70 per week in this city. Compared to any of the above, the printers in Government employ are faring badly, the reason for which can not be defined, for certainly no one will claim that any of the trades mentioned requires a higher intelligence than is required of printers, nor a greater skill. As a matter of fact, when the training required of them and the class of work they are called upon to perform is considered, one can but agree that the printer, especially the Government printer, is about the poorest paid skilled mechanic that can be named, and in all justice this should not be permitted to continue.

The figures submitted are the scale rates. As I said, there are many job printers and machine operators, too, in this city receiving above the scale as there are working for the scale rates. This applies more to job offices than to newspaper offices, where the scale rates generally apply.

In view of all these facts, it is my earnest hope that the committee will look favorably upon the recommendation of the Secretary of Agriculture in this case and report out this increase for the Weather Bureau printers to \$1,600 per year, which would leave them yet far behind what is being paid by private employers for the same class of work.

I thank you for this opportunity to present this appeal.

MONDAY, JANUARY 10, 1921.

FOR INVESTIGATIONS AND EXPERIMENTS IN DAIRY INDUSTRY.

Mr. ANDERSON. The committee will come to order. The committee will take up item No. 61, "Necessary expenses for investigations and experiments in the dairy industry," and item No. 62, "Necessary expenses for investigations and experiments in animal husbandry, etc."

Mr. MUNN, I understand you are in charge of the hearing?

Mr. MUNN. Yes, sir.

STATEMENT OF MR. M. D. MUNN, ST. PAUL, MINN., REPRESENTING THE NATIONAL DAIRY COUNCIL AND THE AMERICAN JERSEY CATTLE CLUB.

Mr. MUNN. My name is M. D. Munn, and I am president of the American Jersey Cattle Club and also of the National Dairy Council.

I want to just briefly outline our position in relation to this matter.

At the outset I want to say that perhaps no one has a keener appreciation of the conditions confronting you gentlemen in working out appropriations than I have, or the men who are with me. We realize fully that it is now a matter very largely of how that which is absolutely necessary may best be expended for the next year or two, rather than how much you should generally appropriate.

I assume that in this department of the Government you will determine upon a certain amount of money to be available, and then you will have to use your best judgment in determining how that can best be used for the most efficient results.

It does seem to me at this time that a serious question confronts this country in the conservation of food supplies and the production of food supplies. We are drifting all the time toward a consuming country and away from a producing country as far as agriculture is concerned. We have been carrying on considerable investigation work outside as well as through and with the Department of Agriculture on the most important sources of food supply and the most important foods that we have.

Dietary scientists have been working for some years and have reached conclusions which are now admitted to be axiomatic, namely, that one indispensable food is the product of the dairy cow. I think students of agriculture are also convinced and are fast reaching the conclusion that the dairy cow is not only indispensable as the source of supply of the most important food that we have, but also as a conservator and a fertilizer of the soil, and consequently equally important in the conservation of agriculture, as well as in the economics of our food supply. The Dairy Division of the Department of Agriculture has been doing some very valuable work, and there is a great deal of work that seems to us indispensable in carrying on this program that I have just briefly outlined. We must build our supply of dairy foods. The figures coming in so far from the census and the best information we are able to gather from study indicate a

gradual shrinkage in the dairy industry rather than the expansion that many have hoped for. I think that is being checked. I think the tide has turned in that respect, and the farmer is coming rapidly to realize that the dairy cow is important to him in his immediate available cash in carrying on his business.

His milk check that comes to him, either daily, weekly, or monthly, is an all-important thing for him just now, and we find in our work everywhere a growing feeling among the farmers that they must pay attention to the dairy cow more than they have in the past. That means that the work being done by the Dairy Division is even more important than it has been in the past. I do not know what the recommendations are in detail. I do not care so much about that. I understand that they have requested or recommended an appropriation of approximately \$490,000 or \$498,000. Is that about right?

Mr. ANDERSON. Yes.

Mr. MUNN. I know what their lines of work are quite well. I am familiar with them. For instance, they are carrying on the organization of better bull clubs—clubs for improving the production of bull calves. They are carrying on this work to enable farmers to determine whether or not a cow is profitable. In other words, helping to weed out the liabilities in the dairy industry of the farmers and restore them an asset; that is, a cow that will produce more than she consumes in the value of feed.

Those are two very fundamental and important things. It seems to me, however, above those are two other lines of work that they are carrying on that are more important. Their work in connection with feed for not only dairy animals but all farm animals, but especially for dairy animals—nutrition is all important to-day with the farmer. This industry has been suffering from the greatest menace that I think there is. Tuberculosis does not compare with it in my judgment. It is what is known as contagious abortion. We are fast reaching the conclusion that that is due very largely to lack of elements in the food that these cattle get. A dairy cow that is giving 10,000 pounds of milk is giving up every year 0.75 of a pound of mineral salts for every hundred pounds of milk that she gives. Those mineral salts, we are inclined to believe, give strength to the muscle, tissue, and bone that the animals have, which enable them to carry their young through the period of foetus growth. We are not sure about that. We believe it. We want to know about it, because the loss to the dairy industry, to say nothing about the animal industry—the loss to the dairy industry alone is something terrific from that one source.

The dairy division is carrying on some experimental work that seems to us all important, and in this connection we believe that in the course of a short time they are going to give us some valuable information that we can use in educating the farmers of this country better how to feed their animals and prevent this loss.

They have been carrying on some very valuable work in the manufacture of cheese in this country. You gentlemen probably know about it, but I will say that about 20 per cent of all we eat in our food to-day comes from the dairy cow. Out of every dollar that we spend for food 20 cents of it is spent for dairy products; milk and its products. These products are fluid milk, butter, ice cream, and

cheese. We are one of the lowest cheese-eating nations among the recognized advanced civilized nations. That is because we have not been manufacturing cheese that is in great demand. We have not the Edam cheese, we have not the foreign cheese in demand, because it is a cured cheese. Our cheese, in a very large measure, is not cured cheese. We have been importing all of our Edam cheese, most of our Roquefort and Camembert cheeses, and so on. Swiss cheese in particular. They have been working down there for some little time, developing bacteria or the germ that is necessary in making this cheese a successful marketable cheese.

It has resulted in starting this country in the manufacture of these important cheeses and at the same time giving us valuable information on the American cream cheese that we make so much of, which I think is going to result in our being a much larger consumer of cheese in this country than we are to-day. Cheese is the most wholesome and the most valuable protein food that we have. That work is going to be of great value as supplementing and taking care of our food supply and at the same time helping to build up this industry.

I have just referred to these three of four subjects that they are working on as being of great importance. There are two or three others that to my mind are important, but not as important as these.

Just what you men are going to be able to work out in the way of helping to apply what we think is a very vital part of our fundamentals in this country in connection with this I do not know. I had hoped, though, that you could so distribute the funds that are at your disposal in this appropriation as to give the dairy division what they have asked for here, because to my mind we can not spend \$450,000 or \$500,000 in any better work than is being done there, and which will be of more real use in conserving our source of food supply and giving us what we need in this country, and in helping the boys and girls to make vigorous men and women.

To my mind a country that is spending as many billion dollars as we have spent in the last four years in war and expenses incidental to that can well afford to pay for a short time a little less attention to appropriations to continue the construction of instruments that kill and build up sources and means which will supply us with that which is far more important than battleships—more important than guns and cannons, namely, a strong, vigorous group of men and women in this country.

When you go back to the figures and realize the per cent of boys under 23 years of age that were rejected because of physical incapacity, and know, as we know, the very large per cent of this rejection was due to the fact that they had not had proper food and not been properly nourished, you realize the importance of this kind of work. We can not hope to maintain our position, if we are called upon to use these instruments of destruction in the way of battleships and guns, unless we have got able-bodied young men to use them, and the most important thing for us to-day is to see that we have strong, able-bodied men and women in this country. Vigorous, strong, robust boys and girls, coming along to take the places necessary for carrying on this work, and we can not have those things unless we can build this dairy industry, and we can not build this

dairy industry unless we have support for these particular branches I have just referred to.

That is all I have to say generally. There are several men here I would like to have say a few words on this question, on different branches of the industry, representing different parts of the country. Senator Hackney and Mr. Walker and Mr. Wentworth, and others.

Mr. ANDERSON. We will be very glad to hear you, gentlemen.

Mr. MUNN. Senator Hackney, vice president of the Holstein-Friesian Association.

STATEMENT OF HON. J. M. HACKNEY, REPRESENTING THE HOLSTEIN-FRIESIAN ASSOCIATION OF AMERICA.

Mr. HACKNEY. I am a breeder of dairy cattle as well as a farmer. I have been farming all my life. I am also vice president of the Holstein-Friesian Association of America, and that is why I am here, largely.

I have been asked by the president, who is absent in the West, to come here and represent him and represent the association before this committee, to back up this appropriation that the department is asking for. This association which I represent has a membership of 25,000, engaged in the raising of pure-bred Holstein-Friesian cattle.

Minnesota, as the chairman knows, is the largest pure-bred producing State in the Union. I represent also the Minnesota dairy interests of every breed. It is the second largest State in the Union in the volume of dairy products of all kinds. It is natural, therefore, I presume, that men from Minnesota should come down here and ask for help for the industry.

I also think I am in a position to say something to you, Mr. Chairman and gentlemen, on the value of dairy products as an economic factor in our life and the life of our people as compared with wheat raising, for I have been engaged in wheat raising. I have raised wheat in Minnesota, North Dakota, Saskatchewan, and Manitoba.

Last summer I had some wheat in North Dakota, a beautiful wheat field, which I thought would average 25 bushels to the acre. I was there on Tuesday looking it over and was very proud of it. On Monday morning following that I received word that black rust had taken that wheat. In some parts of North Dakota, where the rust did not strike, they got an average of 25 bushels to the acre. That was true of Minnesota, Canada, and the Northwest States generally, that wherever the rust did strike, which was quite general in North Dakota, the wheat average dropped down to 5 bushels. My wheat averaged a little better than 6 bushels.

For many years I have been studying the problems of the farmer from the standpoint of wheat he produced, and its effect upon the Nation and the people as a whole; not only the farmers, but the people of the cities, because we must feed the people of the cities. Primarily we are an agricultural country, but I have given a great deal of study to it and I have become familiar with it, and I am convinced that the greatest economical factor in the happiness and welfare of the people of both the farming communities and the cities is the dairy cow.

Our national association is spending about \$125,000 a year in extension work, in boosting calf clubs and pure-bred bull clubs, and

trying to get the farmer, if he can not start a pure-bred herd, to do away with the scrub sire and get a good sire. We are doing a tremendous amount of work all over America. Not only that, we are beginning to notice the influence of dairy farming upon the other countries of the world.

It is natural, therefore, that we believe in the work the department is doing down there. You sit here and you know what is going on. I imagine that this is like any other private business, and especially like any other public business. A great amount of this money is simply wasted. That is natural. I was for eight years on the Senate Finance Committee in my own State, and I used to sit, as you are sitting here to-day, listening to these arguments and wondering what percentage of every amount of money appropriated for any purpose might be wasted. So I dare say some of this work that this department at Washington is doing may be wasted; but, as a whole, they are doing good work. I see the work wherever I go in many of the States of the Union, and I am surprised, Mr. Chairman, at the amount of money that this department is asking for, only the sum of \$500,000 to carry on the work of fostering and improving the dairy interests of this country.

In Minnesota alone the dairy products amount to \$155,000,000 per year—more than the output of the iron ore in the greatest iron-ore State in the Union. Just think of it! That is Minnesota. Now, multiply that by the other States and think of the volume of business that is done in the dairy industry, and the department at Washington simply spends a half million dollars in backing up this work.

I am not so much concerned in the appropriations in detail. I want to see this research work continued. It is a long process. Any man who has any idea of what is required along scientific lines to get at the fundamentals knows that it takes years to carry it out, and I would hate to see anything done that would injure the progress of this research work that the department is carrying on, but I likewise feel the importance of this cow-testing association.

Mr. ANDERSON. Senator Hackney, on that proposition, the amount which the dairy division is spending now on extension work, which includes cow-testing association work, bull-testing association—all that sort of thing—is not a very large sum. It probably is not over \$30,000. The vast amount of that work that is being done now is being done through the regular extension service, where it ought to be done. It is not primarily dairy work any more than it is animal-husbandry work, and we have an agency down here in the department that is primarily engaged in extension work, and it seemed to me that it was advisable, as far as possible, to concentrate that extension in the States Relations Service, which is doing the bulk of it anyway. I have not been able to see any particular advantage in retaining a small part of it in the appropriation for the dairy work or the animal-husbandry work. I do not mean that the work is not valuable, but it seems to me that more of it will be done and that it more properly belongs in the extension division proper. Everything that the dairy division can do upon that has

A county agent can do that just as well as a dairy expert can. For that reason it seems to me that it is desirable to concentrate the appropriations that relate to extension work purely in the States Relations Service, which is doing most of that work anyway, and let the dairy division work out these fundamental problems, instead of spending this money in the production of extension work, which is to a certain extent outside of the limits of its fundamental purpose anyway.

Mr. HACKNEY. Well, I am not familiar with the detail of where this money is being used. I know the importance of the calf-club work and the pure-sires work and the cow-testing association. I suppose your remarks refer to the animal-husbandry department, which has reference to beef cattle as well as dairy cattle. No man is so lacking in intelligence as to appreciate the fact that the human race must have meat as well as dairy products, but I can point you back to only a few years ago when people were eating too much meat. The beef industry has carried on its extension work to such an extent, and the dairy interest has gotten so far behind, that it has taken a great many years of hard work and a lot of money expended to get people to realize the value of dairy products.

Now, Mr. Chairman, there is something back of this fundamentally—this dairy industry—and that is more than the use of dairy products for the human race as food. No one questions the value of dairy products for human food, especially with relation to children; but I want to tell you, Mr. Chairman and gentlemen of the committee, as a farmer of 25 years' experience, that the thing that is the matter with the agricultural districts of this country to-day is too much of the wheat-raising kind; not too much of the beef-raising kind, for we are about in the same position with the beef industry to-day as we are with the dairy industry. The tremendous economic waste, by reason of men farming too much land in wheat raising, has caused him to foster the dairy as something that will increase the happiness of the people and get the people out of the cities and back to the farm. That is why I am primarily engaged in the pure-bred cattle business, because you can not get a boy onto a farm with an old scrub cow any more. You have got to show that boy—he is probably a student from the agricultural college or he is going there or intending to go there, and he has studied things from a scientific standpoint, and from a standpoint of how to handle the farm different to what the old man handled it, and there is nothing, to my mind, in the State of Minnesota that is helping to keep the boy on the farm like the dairy industry.

The beef industry will not do it. It can not do it. I say to you frankly, and I would say the same thing if the beef men were here, in observation of the western plains and on the farms where the pure-bred beef cattle are handled, although it is better on the pure-bred beef farms than on the old range, it is the laziest job; it is a lazy man's job, and I want to tell you what we want to-day is to keep people busy, keep our young men and our young women busy, and there is nothing that will do it like the dairy industry. There is nothing that will keep the boy on the farm or call his attention to the farm like the dairy industry. Many of our city boys are going out on the farm, where they ought to be, because they enjoy this modern method of producing dairy products.

That is why I am intensely interested in dairying. It is more than simply the feeding of the people. It is because it is a movement that is created for the purpose of getting people back to the farms and getting them interested in better and more intensive farming; getting rid of running over a section of land when they can do it on 25 or 80 acres. That is what we have to think about, and that is what I want to see carried on in Washington as the head. There has to be a head somewhere.

Our National Holstein-Friesian Association is trying to do this work for our breed of cattle, but we recognize the fact that we have to do it as a Government proposition to a certain extent, because there are so many breeds of cattle and so many varying interests. So, I am interested, and those that I am representing are interested in these appropriations, and I am here for the purpose of saying that we hope you will recognize the dairy industry as being fundamental in our section, regardless of whether we are from the West or where we are from.

Mr. ANDERSON. We thank you very much.

STATEMENT OF MR. J. G. FARRELL, ST. PAUL, MINN., REPRESENTING THE NATIONAL DAIRY PRODUCTS COMMITTEE AND THE NATIONAL CREAMERY BUTTER MAKERS' ASSOCIATION.

Mr. FARRELL. Mr. Chairman and gentlemen, it is really a duplication to repeat what few remarks I have to say in regard to this work of the Dairy Division.

Being acquainted with it for the past 25 years, I am naturally of the opinion that they ought to have funds enough to carry on these projects that they have started out upon, in the way of developing the entire dairy industry, both of the South as well of the West.

Our southern friends sometimes tell us that peanut oil, oleomargarine, and cottonseed oil is just as good for them as butter. We do not have much controversy on that, but I was appointed, something like 16 or 18 years ago, as expert dairyman in the Dairy Division, as they called it at that time. I made application through some of the civil service that they had by writing a paper, and it took about a year to get the appointment, and after I had the appointment the news came with it that the position paid \$1,500, but that they might be able to get me \$1,800 if the appropriation came around.

I was somewhat younger then, but I was rather amused at the situation. They wanted to take a good man—sometimes some of us are called good men in the agricultural work whether we are or not—but I was rather amused at the department at Washington, which had to come out into a section of Minnesota to pick what they called a fairly good dairyman, and then offer him a salary that a few cows could give him if he would stay home and strip the cows. Now, since then I have become more acquainted with the department and its projects, for instance, in the way of getting foreign cheese made in this country from our own dairy products. Any such assistance to the factory men, the creamery butter makers, particularly the small creameries of the country, such as we have in Minnesota, North Dakota, and South Dakota—the larger concerns do not ask a great deal of

It has been my impression for many years that the Dairy Division over there is sort of a tail of the thing, of the animal department, and we have not progressed, in my mind, as rapidly as we should along the fundamental principles of dairying in this country. We are held up.

Speaking from my own experience on the viewpoint of the assistance the Dairy Division can give our people when we ask for such assistance, we find very often that they have not got the class of men; if they had procured the services of this class of men, he would only remain a short time when somebody offers him a higher salary or a few dollars more and he is gone. That is repeated from year to year. Consequently we are not getting along in this research work as rapidly as I think we should for a country that does about \$2,000,000,000 worth of business in dairy products.

You are so thoroughly familiar with it, Mr. Chairman, and I realize your position of how you are up against an economic proposition here, that I do not feel that I should urge it as strongly, in the position you are in, but we do wish that this committee could see their way clear to keep the Dairy Division of that department going along the fundamental lines that it has at least started out on. It has not got as far as we would like to have it. We should have a dairy bureau there instead of a division.

I think they are asking for somewhere in the neighborhood of \$500,000, and that is not a drop in the bucket to the amount of business and the value that the dairy industry in this country is to the country. Not only that, but we must continue the breeding of cattle; the handling of the situations; diseases; giving these people out on the farms this information. Of course, that is statistical. They do that to a great degree, but they often ask for direct help from these people, from a man who can go out there and show them. Yet, the country is so large that it is hard for them to cover it.

I would like to see the committee, if possible, give this Dairy Division the amount they asked for, and to see, if possible, the service that they can render to the people in connection with the dairy business. They tell us that they are handicapped and that when we call for assistance they can not give it to us.

Mr. ANDERSON. We think always that is more or less true. Probably it is true to a larger extent that it ought to be. I think the committee is impressed with the importance of the dairy industry and with the value of the work that the Dairy Division has been doing. As Mr. Munn suggested, it is not a question of our being able to give to the dairy industry or to any other branch of agriculture the amount of money which we think should be expended with large savings in waste, or any great increases in production, but it is largely a question of trying to distribute what money we have got and getting the best results, and putting it in the things that are the most important and that will bring about the best returns. I am sure that the committee appreciates the importance of the dairy interests and wants to go just as far as the circumstances will permit to promote it.

Mr. FARRELL. We realize that, Mr. Chairman. I think we fully realize your position.

Mr. MUNN. There is probably not much use of our going any further.

Mr. ANDERSON. No; we would be glad to have you present whatever you have to present.

Mr. MUNN. Unfortunately when this bureau was established over here no one realized the importance of the dairy industry. It was really the animal disease department. That is what it was. The Bureau of Animal Industry was organized with a veterinarian at the head of it for the purpose of eradicating certain forms of disease. The Dairy Division has grown up as a department under that and is necessarily overshadowed. The relation work which you refer to, the limited amount being done by the Dairy Division, pertaining to the dairy industry, if it were not for the fact that they had an appropriation for that purpose I venture to say that we would not get a dollar expended by that department for the dairy industry in the different parts of the country. I know what trouble we have in getting any assistance in that line, because if there is a shortage in any other department upstairs it goes there. We are practically told that we are too insignificant to be considered. So I hope that the Dairy Division will have some money to use for that purpose.

Mr. ANDERSON. Are there any other gentlemen who desire to be heard?

Mr. MUNN. Mr. Wentworth is secretary of the Producers of Wisconsin and Iowa. I would like to have him say a few words.

**STATEMENT OF MR. W. A. WENTWORTH, DES MOINES, IOWA,
REPRESENTING THE IOWA DAIRY COUNCIL.**

Mr. WENTWORTH. It would be simply with reference to the extension work which the Dairy Division is doing that I would like to make a few remarks. I happen to know of a situation up in our State with regard to the extension work there under States Relations Service.

The Dairy Division was able to maintain one extension man in Iowa entirely on dairy manufacturing work, One man on production work. Those men were well able to keep an interest throughout the State in improving the conditions under which dairy products are manufactured. The man who is in charge of the production work also was able to keep considerable interest in bull associations and cow-testing associations, which did tremendous work. That has been curtailed, and since that time there has been a lessened interest on the part of the agricultural extension department in Iowa in dairy work, and it has been necessary for the people who are primarily interested in the dairy work to continually remind the people in charge of extension work that there is a dairy industry in Iowa, and it should receive some attention at least.

With the county agent that is more or less true in the same way. As a matter of fact, I believe that the dairy industry is a 365 day per year occupation, and those interested in the agricultural extension department in the States Relations Service take up things which are timely at the time when they are of considerable importance and rather impressed upon the country. For example, the seed corn campaign. There is one time to conduct that, and you might cite any other number of instances, but dairy work must be kept before the people continuously.

Mr. ANDERSON. The reason for that is that it is a 365 day in the year industry.

Mr. WENTWORTH. Yes, sir. For that reason we want to impress upon you as a committee that some one should be in a position to keep that before the agencies in the States Relations Service, in the extensions departments in the various States, otherwise they are liable to permit it to slide into the background, as Mr. Munn and the other gentlemen said.

I do know that in the State of Iowa—I have about one-third of the State which carries a very large percentage of the 1,000,000 dairy cattle that are owned in the State—I know there are on the farms in those districts three hogs as compared with two hogs where there is not so much dairy production. Beef cattle in those districts are the same as in other districts, meaning that there is much more agricultural production in those districts than in any of the other districts, and anything in the way of curtailment of the extension work of the dairy products, I feel—and the people interested in the business feel the same way—that it will materially affect every other work that the Dairy Division and the dairy industry is able to do.

We would like to urge upon you the maintenance of that \$30,000 item for extension work within the Dairy Division.

Mr. ANDERSON. We are very much obliged to you.

STATEMENT OF MR. D. E. ANDREWS, WEST CHESTER, PA., REPRESENTING DAIRY EQUIPMENT MANUFACTURERS.

Mr. ANDREWS. I do not think that I have very much to add to what has been said, unless I could bring out a point that at this time we are in a position where we will have to do much closer figuring.

I represent a manufacturing concern that sells dairy equipment to farmers. I am also a breeder of dairy cattle, and I operate a farm. I know in our business during the past two or three months we have had to get down to some pretty close figuring, both as regards the expenditures and the results that may be obtained—that is we have had to make a study of markets. We have a department in which if at any time in the history of our business we needed to make certain expenditures it is right now. During the past few years business has come easy, as it were. There has not been the necessity for trade analysis, for the development of new territory, for the development of existing sale conditions or buying conditions. We have had plenty of business. We are at a point now where we will have to spend more money in such work, and we are in a position where we want to economize in every sense of the word in a business way our appropriations for the coming year for sales promotion work—that is, for trade analysis and development of new sales territory for our experimental work—will be very materially increased over that of any previous year.

It seems to me that the Dairy Division of the Department of Agriculture is in a whole lot similar position. The dairy interests have progressed, I may say, rapidly during the past few years. We have gone ahead without a lot of things to contend with that we have now. We now find ourselves in competition with foreign countries in dairy

products. Not only must everything be done now to increase our markets, but everything possible must be done to provide more efficient production of dairy products. That means education, and we must look to some source for it.

In thinking over the question of appropriation for the Dairy Division to date, I have been impressed with the fact that it there ever was a time when the Dairy Division needed money for extension work, for educational work, and for research work, and for all of the work pertaining to the industry, it is right at this time.

I know that from a business standpoint as a dairyman or a manufacturer, individually or personally, I would not consider the curtailment of such expense at this time. Rather would I commence to figure on spending a little more money along those lines.

That is about all I wish to offer. It is just the thought of getting this expenditure and still getting more efficient use of the forces that we have, for the benefit of our agriculture.

Mr. ANDERSON. We thank you very much.

STATEMENT OF MR. R. W. GOW, NEW YORK, REPRESENTING THE AMERICAN JERSEY CATTLE CLUB.

Mr. Gow. In the course of my connection with the American Jersey Cattle Club, I have from time to time had occasion to visit the Dairy Department here in Washington, and I have been greatly impressed with the research work and experimental work that has been carried on there for a quite a number of years. I think that if there is to be any curtailment of that work, it would be really the misfortune of the country at large; not only to the dairy interests but to the country at large.

We are in need, I think, now of protection against the dumping of dairy products in this country. I believe in protection, but I think we ought to keep these foreign products out by greater efficiency in this country. Efficiency means education of the dairyman and the farmer, and you need your Dairy Department to do it. It is the only agency that can possibly do it in an adequate way, and I hope you will see your way to recommending the support of that division and keeping it up, if not augmenting it.

Mr. ANDERSON. We are very much obliged to you, Mr. Gow.

STATEMENT OF MR. G. B. SCOTT, MINNEAPOLIS, MINN., REPRESENTING THE HOLSTEIN ASSOCIATION.

Mr. Scott. I have been a farmer and dairyman for the past 12 or 13 years, and am at present secretary-treasurer of the Holstein Association, which I believe is to-day the strongest breeding association and the most active of any the State associations.

My work, of course, has been largely along extension lines, but it occurred to me while these gentlemen were speaking that it might be well to point out to you how the research and experimental work applies very directly to our extension work.

We have been working largely through banks in Minnesota, trying to get them to realize the importance of the dairy industry in the development of the State, and to encourage the farmers to buy pure-

Mr. Hackney has told you that our dairy products last year were valued at something like \$155,000,000, but I believe if we had the figures to work that out you would find that that actually represented a loss to the State rather than anything else, as our average crop was produced at a loss, under normal conditions.

It is hard enough in the first place to get any man with dairy cows to sit down and run his business in a businesslike way. It is a hard job, when he gets through milking his cows and taking care of them, besides running the farm, he thinks he has done a good day's work, he hasn't much time to spend on books or study, but when we go to the banks we find that we could reach the farmer through them better than in any other way. The banker meets us frequently with this statement: "Well, here is so and so in this community who has a very fine herd. He just got things started and tuberculosis broke into his herd and he is still in debt, and his cattle have been condemned, and as I understand it he gets about \$155 a head for pure-bred animals that were valued at anywhere from \$500 apiece up." Naturally, they are very slow in advancing money to a man who is not pretty well fixed financially, who is not able to go in strong for pure-bred cattle. They are slow to encourage that thing as long as this danger of tuberculosis, and worse danger, the danger of abortion, is apt to wipe his herd out.

I have in mind one of the finest herds in Minnesota, which lost 75 per cent of its calves last year through abortions. That represents a loss that we really can not put in dollars and cents, because those animals would have been of inestimable value in raising the standard of the dairy herds of the State. But suppose a man starts out and he only has a few head and he has gone in debt for them and he is hit with a disaster of that sort, it practically wipes him off the map, and for that reason they are afraid to go into it. They do not feel that they are safe in making an investment of that sort, with those diseases hanging over their heads. I don't want you to think that we are asking the Government to bear all of our burdens up there: that we are not willing to help ourselves to a certain extent. Our organization has now underway—it is looking for a site to start a farm for tubercular cattle, pure-bred cattle that are condemned, in order that we may save them for slaughtering; save them for breeding purposes. That we will finance ourselves among our members, but even that, taking care of only a small part of the cattle, is a pretty big job for a small organization to handle. It is hard to raise money. Any of you that have had any experience with farmers' organizations know how hard it is to get money to keep anything going on a large scale; but we are going to do that, and have every reason to think that it will be a success.

Aside from saving those cattle, it will give our veterinarians a chance to study tuberculosis and the best ways of avoiding it. But, of course, that is not a drop in the bucket. What we have to have before we can go out and sell pure-bred cattle to the average farmer is some way of assuring him that he is not in danger of having his entire herd wiped out and thus ruined almost at the start. I wish that I had kept track of the number of cases of bankers actually reporting to us of cases where they had not looked into this and had advanced money to go ahead and just took the notes of these farmers who bought pure-bred bulls.

I remember one man that paid \$2,500—he and his partner—for a bull 6 months old that was to be used as a community sire. It was condemned four months after they bought it, and you couldn't get that banker or any banker down in that section to advance any more money for the purchase of a pure-bred sire if you went down on your knees to him. The whole business is checked on account of that.

Mr. MAGEE. Where is this?

Mr. SCOTT. Blue Earth County, Minn. I just mention these things in order to bring out the direct relation of this research work that they have mentioned, without extension work and how important it is to our extension work. Think of \$155,000,000 in dairy products in the State of Minnesota alone. We produce that at a loss, but what it would be in other States where this work is not done, I can not imagine. I think, on an average we stand higher than the other States do, but there is a tremendous amount of work still to be done and it does seem to me that \$500,000, even in these hard times, is asking for little enough to start that work and carry it through.

Mr. ANDERSON. We are very much obliged to you, Mr. Scott.

STATEMENT OF MR. J. A. WALKER, REPRESENTING THE BLUE VALLEY CREAMERY CO., CHICAGO, ILL.

Mr. WALKER. I can appreciate exactly the position that you gentlemen are in, and this Congress, and the next Congress, and several Congresses to follow, I presume, after this Great War.

I do not believe that you gentlemen on this Agricultural Committee ought to back up and be in the position that some others are in. Ever since the armistice was signed we have been trying to find out what reconstruction means, and in the last few months we are beginning to feel as though we know.

Mr. MAGEE. We lost nearly two years, I guess.

Mr. WALKER. Yes, sir; but general reconstruction means getting this great destruction back again. It has got to be produced, and it has all got to come out of the soil or out of the sea. Now, it just looks to me that it is "biting off our nose" if in this great work of reconstruction we just go on talking and thinking of economy and our taxation altogether, when it comes to this question of production.

I speak for the whole amount estimated by the Department of Agriculture; not only the dairying but everything else. Let us get after all the production possible in this country.

Take the people out in the farming section; we do business over about a dozen States, which these gentlemen have spoken of, and others. We are not going to suffer out there like the manufacturer in the East. but we have had a great big crop out there this year, on the whole. The purchasing power has decreased from \$14,000,000,000 to \$9,000,000,000, but there is a lot of purchasing power in nine billions; but you let us go along with a slack production, you let us go to economizing and checking up on this production with the possible weather conditions and rust and such things, which would deprive us of a crop next year in this western country, and then the succeeding year the eastern country will come through and they will find out more about what reconstruction means than they know now.

For that reason, gentlemen, let us not economize in the wrong place too much. I think you gentlemen can go before this Congress and before the next Congress and say that we must keep up this production; we must keep up the personnel, as your Secretary of Agriculture so aptly said this morning, to spend this money right. Keep the brains here to use it properly, and then keep up this research work. There is unquestionably a sound argument there. I do not know anything about these items, but I would simply like to ask this. If you are going to allocate that item of bull clubs to some extension department, about all the concern that I would have would be to know what influences are possibly dominating that department. Take these gentlemen here. One-half of them are representing the pure-bred cattle associations. They have been right down here in the very department attempting to work this dairy game, and we know our home is in that dairy department. Now, if you switch us off of that, all these bull clubs and this big fundamental work——

Mr. MAGEE. All the what?

Mr. WALKER. The bull clubs.

Mr. ANDERSON. Two-thirds of that is being done in the States Relation Service now. You will not be getting very far away from home.

Mr. WALKER. All I was going to say, Mr. Chairman, was that if it is allocated, put a string to it; it is to be done for the dairy interest.

Mr. MAGEE. I am a new member and I did not comprehend the meaning of the words "bull clubs."

Mr. WALKER. That means to try to get the farmers to get pure-bred bulls at the head of their herds.

Mr. ANDERSON. It is cooperative?

Mr. WALKER. Yes. Instead of producing 125 pounds per cow in this country, you get them up to where Denmark has it, 250 or 300 pounds.

Mr. MUNN. It means getting a community together and purchasing a pure-bred sire to use in that country.

Mr. WALKER. Put a string to that, and let the dairy industry know that we are going to have something somewhere.

Right now is a bad time to shake up. There is a whole new machine down here, and it should be overhauled to get more effective work; but during the war most of us were down here helping in the war work, and I know that your machine over here in this executive was pretty well upset, and everybody's machine in a business way was upset, and you have got to rebuild that a little bit. You have got to rebuild. It is better to rebuild what we have for a while, and let us get thoroughly reconstructed and then go ahead with your allocations.

I thank you.

Mr. ANDERSON. Is there anything further?

Mr. MUNN. No, Mr. Chairman. That is all, I think.

Mr. ANDERSON. We are very much obliged to you, gentlemen, for the generous way in which you have understood the committee's problem.

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